



The Gateway Innovation District

Alternative Future Visions for Columbia Gateway

Executive Summary

The Columbia Gateway Project is a comprehensive report on future development for the Columbia Gateway site in Columbia, MD. This report charts the next steps to enhance the viability and explore the economic possibilities of the area.

This report lays out key issues and goals for impending planning efforts. It is a framework that establishes options for the next 25 years and beyond. This report contains three 'alternatives' for development: low intensity, medium intensity and high intensity. It also explores the possibility of transforming the area into an "innovation district" which is defined as a spatial geographic model that stimulates economic growth by clustering entrepreneurs, startups, business accelerators and incubators.

Key Issues:

The landscape of Columbia, MD will continue to shift over the next 20 years. The population will continue to increase and become more diverse. The Columbia Gateway area is one of the last areas available for extensive development within Howard County. In order to keep up with shifting population demands, Howard County will need to develop a unique plan for redeveloping this area in order to create and expand a "work, play, and live" atmosphere. This report outlines some key initiatives, including:

- **Economic Development:** Tactics are recommended to encourage business innovation and growth, in order to make the area a leader in 21st century technologies. Particular attention is given to making the area into an innovation district on various levels that would support the area's growth and economic conditions.
- **Transportation:** This report places great emphasis on transit, bike and pedestrian transportation while also improving existing road networks within Columbia Gateway. Each development alternative expounds on what improvements would need to be made to support proposed development within the area.
- **Housing:** Suggestions are made to create housing options that appeal to a diverse group of people. The report also provides options for how affordable housing options can be added to the area.
- **Community Design:** This report recommends a well-designed a community that includes green spaces, community areas, and more. The plans offer a way to transition the area from an office environment into a livable and recreational environment as well.

Acknowledgments



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Urban Studies and Planning Program
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June-August 2016

with support from:

Howard County Economic Development Authority
and

University of Maryland's
Partnership for Action Learning in Sustainability (PALS)

Special thanks to:

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Introduction

The Columbia Gateway Center is an 884-acre industrial and office park located in Columbia, Maryland at the intersection of MD 175 and the I-95 freeway. It is home to 94 office or industrial/flex buildings including four large warehouses that once housed a GE manufacturing facility. Currently Howard County is investigating options for redevelopment of the site.

The purpose of this studio was to assess the feasibility of a redevelopment project for the Gateway Center that would transition the site to a higher intensity of land use, as well as transform the office park into a regional hub of innovation. The resulting document provides recommendations on land use, urban form and design, environmental planning, transportation and connectivity, economic activity and marketing/branding, as well as social and cultural implications for the maturation of leases and the covenants of these buildings. Extensive research has been conducted on Innovation Districts in order to determine the feasibility of transforming a sprawling auto-centric suburban industrial complex into an innovative and creative neighborhood with a strong sense of place while staying in line with the site's identity as a prime location for office and industrial uses.

Themes:

This report begins with a profile of the Gateway Center, encompassing the geographical context, demographics, current land uses, and inventories of current businesses and environmental site features. This is followed by a literature review of Innovation Districts, and discussion of how the concept can be manifested in the Gateway Center. Three alternative redevelopment plans are proposed, ranging from a low-intensity development scheme to high-intensity. These plans present a variety of proposed elements, organized thematically by the degree of changes to the site. The individual plans are not meant to function as separate entities in contest with one another, but rather as complementary proposals with a range of options to account for differences in market conditions or general feasibility. Each plan follows several common themes, as follows.

1. The first theme is to highlight the intersection of McGaw Road and Snowden River Parkway as the primary entry point to the site and start phase one of development there. McGaw Road is extended down the site all the way to the Columbia Gateway Drive loop road. In all three alternatives, the intersection of the loop road and McGaw Road should be a celebrated node that favors pedestrian activity, multi-modal transportation, and is part of the innovation

core zone in all three plans.

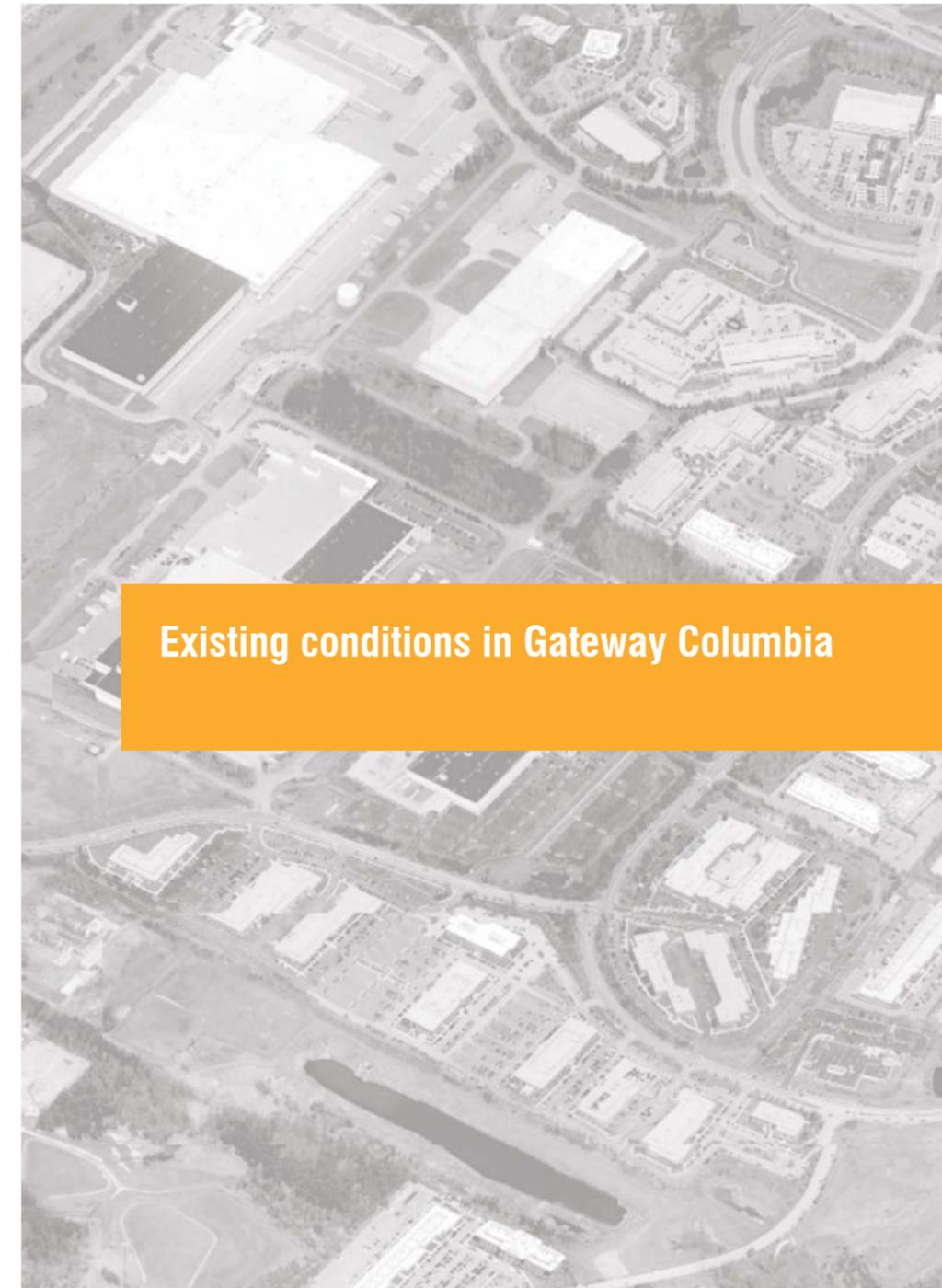
2. The second theme is the central park that divides McGaw Road into an urban boulevard with a large park in the center. The vision of this central park is to provide an immediate public amenity to the site that catches the attention of developers and draws high-quality development to the site.
3. The third theme is to create an Innovation District on the site, acknowledging that the entire site might not be suitable for an innovation district, but that it is ripe for information sharing and that the process has already started with the welcoming of the 'Cirql' building.
4. The fourth theme is to improve connectivity on the site and to the site (site access), and "suburban repair," by creating healthy, active, walkable, urban neighborhoods within walking distance to shops, a range of housing densities and affordable units/mixed-income housing, as well as providing ample open spaces and parks for recreation and enjoyment while creating a neighborhood identity and brand that is easily recognizable.

Among the three redevelopment alternatives, it is this studio's belief that Howard County will find several workable options to transform the Gateway Center into a new residential neighborhood and innovation district.



Figure 1: Columbia Gateway site aerial view; Source: Columbia Market Study

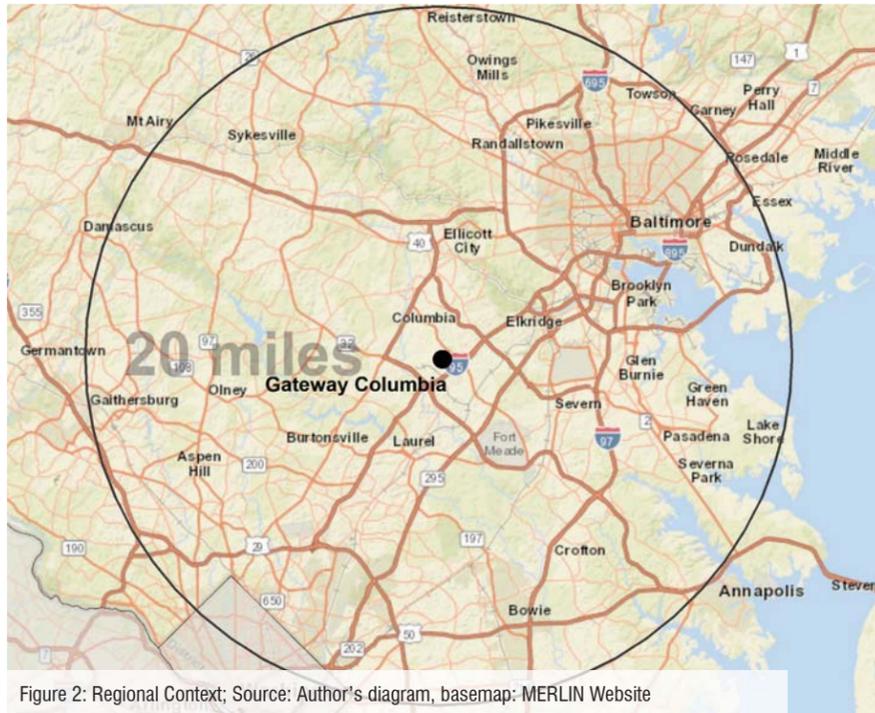
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Existing conditions in Gateway Columbia

Part I
Profile of Columbia Gateway

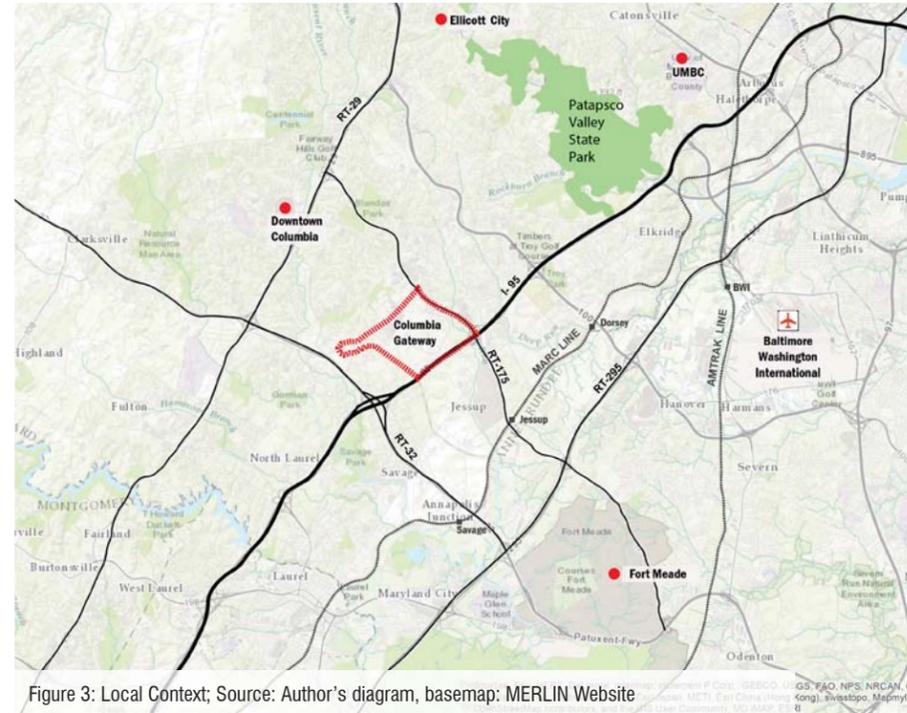
I A. The Context



Columbia Gateway Office Park is an integral part of Howard County, Maryland. Howard County enjoys a prime location close to the Washington/Baltimore Corridor along with the neighboring counties Anne Arundel to the east and Prince George's to the south. As per ACS 2012, Howard County had the third highest median income among all counties in US. The county is frequently recognized for its affluence, educated population and quality of life.

Between 1963-1966 the Rouse Company bought 14,000 acres of land for Columbia Development. During this time the Columbia Gateway site was transformed from a gravel quarry site to a General Electric Appliance Park. From the 1980's to today the area has transformed into an office park that has gradually replaced previous industrial uses.

Today the Gateway Office Park lies in the midst of this use transition, as well as changing work and life styles. Presently, the challenge for this area is to make the



most of its locational advantage and continue to be an attractive business setting in the region.

As illustrated in figure 2, Columbia Gateway Office Park lies almost mid-way between the employment hubs of Washington DC and Baltimore. The cities lie within a twenty mile radius of Gateway. The site offers good highway access and visibility due to its proximity to I-95, I-70, MD 175, MD 32, MD 295 and MD 29. It is also within close proximity of other transit options such as the BWI Airport, MARC and Amtrak rail service.

Another locational advantage is the site's close proximity to Fort Meade, making Gateway an attractive option for defense contractors involved in the cyber security industry. The site is also close to local destinations such as Downtown Columbia, UMBC, Patapsco Valley State Park, Ellicott City and the Route 1 Corridor.

I B. Howard County Land Use & Economic Development

Howard County's most recent comprehensive plan—Plan Howard 2030—was published and approved just a few years ago. Plan Howard 2030 presents several trends and findings, issues many recommendations, and generally serves as a useful guide for this effort to plan for the Columbia Gateway's future as an innovation district. Below are brief summaries of its relevant sections.

Economic Growth Trends:

In 2009, Howard County was home to 187,100 jobs. The County is poised for ongoing job growth associated with its proximity to Fort Meade, proactive efforts by the Economic Development Authority, and the launch of the Maryland Center for Entrepreneurship (MCE). A target of 3,000 jobs per year to 2030 would bring the total to 249,000. This would build on an 18% increase in employment over the most recent decennial census period (2000-2009). Broken down further, there was sizable growth in different employment categories mentioned in Table 1.

The future appears bright for Howard County by virtue of the observed gains in high-tech, high-wage, and high-skill industries. However, these findings are accompanied by decreases across goods-providing, industrial economic activities.

While Howard County can have confidence in the prospect of attracting top talent that is highly educated and has great earning potential, its leaders must carefully weigh strategy options and seek those that maximize inclusivity. Employees in retail and other low-skill and low-wage occupations struggle to keep up with the steep housing and transportation costs associated with the County's suburban location and its relative affluence. Likewise, the range of job opportunities available to those without advanced degrees may be diminished and shut them out from the chance to work in Howard County.

Economic Development Goals

HCEDA's most recent Strategic Plan, developed in 2011, highlights priorities for the new economy that currently faces Howard County. The plan's four themes stress developing:

- **a Knowledge Community** that is rich with educational and workforce development opportunities;
- **a Connected Community** with physical and social networks and partnerships that link market participants;
- **a Reinvented Community** that redevelops existing employment centers and Columbia's downtown while maintaining diversity as a core value and tending carefully to the natural environment; and
- **an Innovation Community** that fosters entrepreneurship, productivity, and technological development, and that is inviting to young professionals

Employment Growth by Business Category		
Category	Type	Growth (2000-2009)
Management of companies and enterprises	Service-providing	420%
Educational services	Service-providing	90%
Real estate	Service-providing	60%
Information	Service-providing	57%
Professional and technical services	Service-providing	34%
Administrative and waste services	Service-providing	32%
Finance and insurance	Service-providing	29%
Local government	Government	27%

Table 1: Employment Growth by Business Categories; Source: Information compiled from PlanHoward 2030

Employment Decline by Business Categories		
Category	Type	Growth (2000-2009)
Manufacturing	Goods-providing	-27%
Farming	Goods-providing	-18%
Transportation and warehousing	Service-providing	-18%
Federal government	Government	-15%
State government	Government	-18%
Retail trade	Service-providing	-14%

Table 2: Employment Decline by Business Categories; Source: Information compiled from PlanHoward 2030

I B. Howard County Land Use & Economic Development

The Howard County Economic Development Authority’s key resource in this arena is the Maryland Center for Entrepreneurship (MCE), which includes an incubator, resource center, technology council, and a catalytic loan fund, among other services. Located between Columbia and Ellicott City, the MCE can be a centerpiece to a collaborative and innovative ecosystem that also incorporates a new branding and marketing campaign, expanded transit options, and a greater focus on STEM, energy, and green industries.

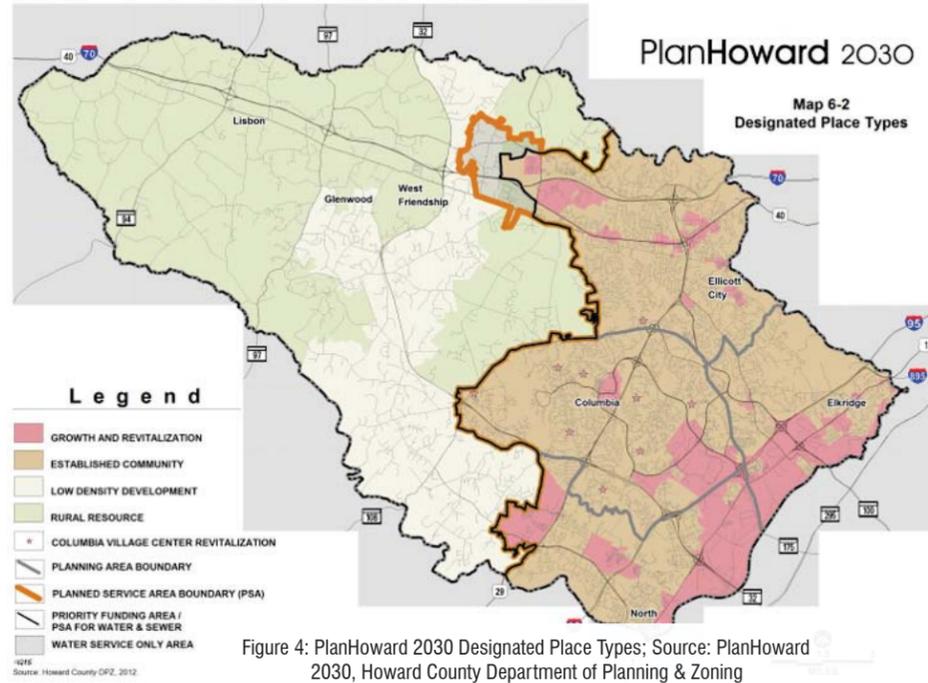


Figure 4: PlanHoward 2030 Designated Place Types; Source: PlanHoward 2030, Howard County Department of Planning & Zoning

Population Growth & Residential Development: Columbia Gateway sits in what PlanHoward 2030 officially designates as a Growth and Revitalization zone. The Gateway and other areas identified in red in figure 4 are slated to absorb a significant portion of Howard County’s future residential growth through infill and other redevelopment strategies, including 1,200 Adequate Public Facilities Ordinance (APFO) housing allocations per year. This allows the County to make full use of existing infrastructure and public facilities in the more dense, well-established East County, where communities are in convenient reach of the urban clusters in Baltimore and Washington. Growth and Revitalization areas are also target destinations for the County’s Green Neighborhoods, as well as needed age- and income-restricted housing units.

Of special importance to the County is striking a balance between its increasingly diverse population, its aging baby-boomers, and a need to appeal to the preferences of the millennial and later generations. Smaller households and multi-family arrangements will characterize a growing proportion of residential environment in the years ahead.

Nonresidential Growth & Development

In 2010, 15 percent of the Baltimore region’s total rentable building area (RBA) was in Howard County. That year, there were also 1,351 undeveloped acres with nonresidential capacity, but without development plans. This likely includes the covenant-restricted GE buildings and other parcels in the Gateway area, which in combination with other countywide properties left an estimated capacity for 78,000 additional jobs. Columbia Gateway and the GE site are prime locations for new employment to support Howard County in achieving its growth goal of 3,000 jobs per annum. Policy 5.6 of the county’s master plan specifically calls for the planning of Class A office, industrial, and mixed-use redevelopment in the GE site area as well as the adjacent Snowden River Parkway.

However, strategies to expand employment in the county must show cognizance for the affordable housing challenges discussed earlier, and they should aim for a sustainable jobs/housing ratio. When periods of job growth coincided with APF limitations on new residential units—stretching Howard County’s ratio from 1.51 in 1990 to 1.78 in 2009—the subsequent upward pressure on housing prices forced many workers to look out of the county for affordable places to live.

I B. Howard County Land Use & Economic Development

Redevelopment Areas

Over the past several years, areas nearby have become targets for profitable revitalization and conversion to mixed uses. PlanHoward 2030’s real estate consultants at RCLCO made several recommendations that will help the County optimize the developments that occur in the Gateway and in its vicinity. Recognizing challenges that face the county such as assembly of smaller parcels, business relocation, zoning impediments, land use incompatibility issues, higher costs of multifamily development with structured parking, and financing and infrastructure needs, their suggestions include:

- Job expansion efforts that leverage the County’s competitive advantage in high-skill industries and that generate additional demand for housing and commercial development;
- Protection of industrial and commercial land from the pressures of conversion to multifamily housing;
- Tiered development incentives;
- Service districts with branding and marketing, such as Business Improvement Districts (BIDs);
- Corridor segmentation and intensification of nodes and employment centers;
- Land banking;
- Flexible mixed-use and PUD zoning and other rezoning efforts that reduce strip retail;
- Enhanced bike/pedestrian accessibility and other transportation improvements for roads, such as better east-west circulation, and transit, such as BRT; these may necessitate a Transportation Management Association;
- Partnerships across public, private, and nonprofit entities.

Transportation

Howard County has a thorough road network that links its communities and employment centers internally and to neighboring counties. The County is also working to implement both a Pedestrian Master Plan and complete a Bicycle Master Planning process earlier this year. However, PlanHoward 2030 acknowledges that the predicted growth in the years ahead will also come with worsening congestion issues due to additional commuter and freight traffic. Furthermore, the existing street network is sometimes disconnected and indirect. Lastly, the frequency and reliability of regional and local transit service are inadequate, despite commuter bus and rail service to both Baltimore and Washington.

Congestion relief will be difficult due to limited available rights-of-way, funding, and cost effectiveness. The county will also need to control auto emissions from the necessary increases in automobile traffic. These challenges must be partially mitigated through alternative transportation programs. These programs can include expanding and increasing the frequency of public transit, as well as regulations and initiatives that promote high-occupancy vehicles, ride-sharing, and car sharing.

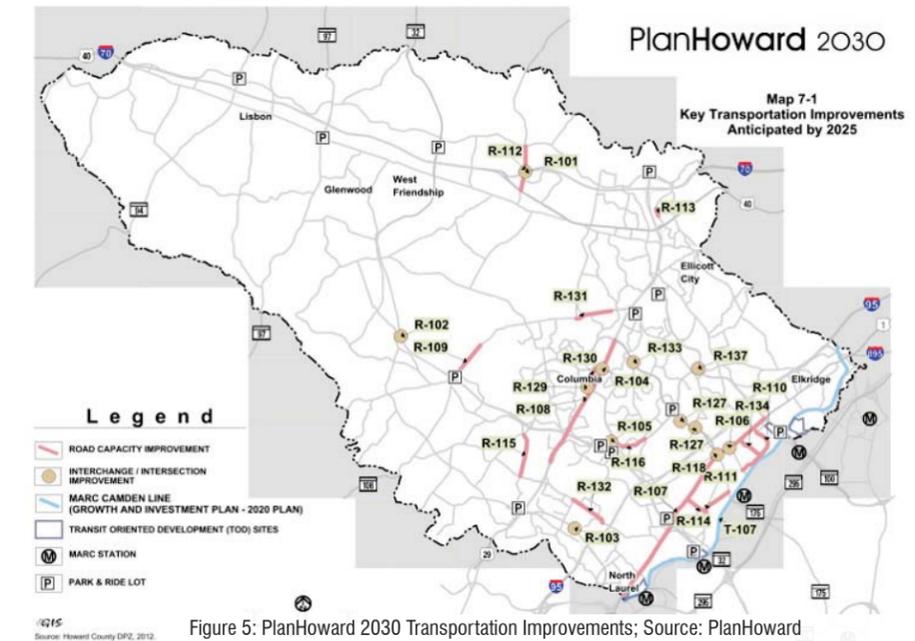


Figure 5: PlanHoward 2030 Transportation Improvements; Source: PlanHoward 2030, Howard County Department of Planning & Zoning

I B. Howard County Land Use & Economic Development

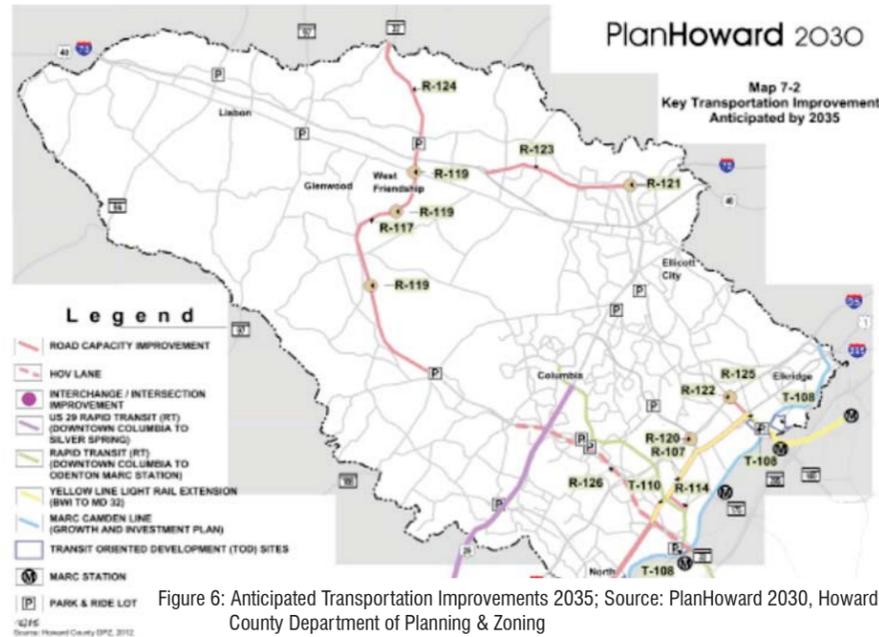


Figure 6: Anticipated Transportation Improvements 2035; Source: PlanHoward 2030, Howard County Department of Planning & Zoning

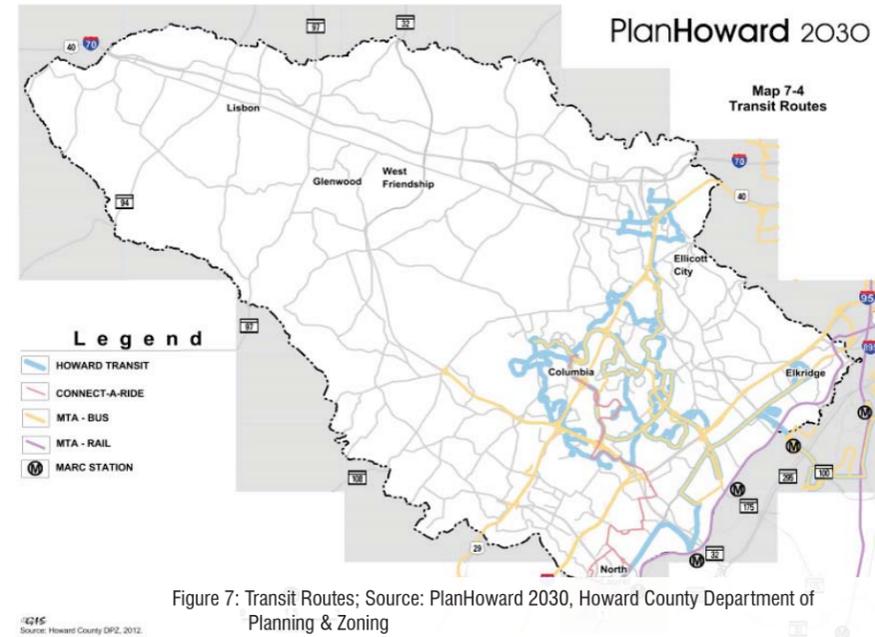


Figure 7: Transit Routes; Source: PlanHoward 2030, Howard County Department of Planning & Zoning

More compact mixed-use development patterns could also reduce the growth of vehicle miles traveled. Some of the key transportation improvements that the County anticipates or desires over the next several years in the Gateway area are:

- Extension of the Baltimore Light Rail and MARC commuter train line on the west side of I-95 (to MD-32);
- BRT from downtown Columbia to the Odenton MARC station;
- A 'New/Upgraded Interchange' near its northern entry point;
- Increased use of the existing park and ride location to the northwest and two to the southwest;
- Concentrated development along Routes 1 and 40 to support easier and more efficient transit service.

Furthermore, Policy 5.7 in PlanHoward 2030 particularly highlights the desire of transportation services and facilities that connect Gateway along with Downtown Columbia, Snowden River Parkway, and Route 1 to Baltimore, Washington, and Fort Meade.

I C. Current Land Use Pattern in the Study Area

The Columbia Gateway center is a prime example of the typical suburban office park developed between the 1970's and the early 2000's. The vast majority of the buildings are built with large surrounding parking lots (ranging from 50 to over 800 spaces) and minimal sidewalks designed to convey workers from their jobs to their offices. Most of the buildings are also built in clusters with a single access point allowing individuals to drive off of either Gateway Center Drive or Robert Fulton Drive. The combination of a lack of contiguous sidewalks, few access points to the main arterial and congestion make this a highly unwalkable area as reflected by its maximum Walk Score of 25. Though it is much more feasible to bike into the site than walk (due to its sheer size and road pattern) the volume of cars and lack of on-road bike infrastructure does not make it an attractive alternative to driving. An off-road bike trail parallels Columbia Gateway Drive, but has no meaningful connections to bike infrastructure outside the site.

Due to the two access points (one ramp to Route 175 to the north and an intersection to the west onto Snowden River Parkway) to accommodate the estimated 14,000 employees working within the site, congestion is a continual problem. With only a handful of signalized intersections, drivers looking to enter or exit the site must wait a significant amount of time while competing with other drivers for limited capacity at rush hour. A 2007 study by Sabra, Wang and Associates found multiple intersections within Columbia Gateway to be at an F or D for level of service. Additional development would certainly exacerbate this problem.

The predominant building typology within the Gateway center is one and two story office buildings housing a wide variety of industries. Most of these buildings are within the Gateway Drive loop and along the northern, eastern and southern boundary of the study area and house industries that are of a similar nature and clustered throughout the site. Such businesses in these buildings range from computer and data processing companies to banking services to real estate investment firms. These firms present a valuable opportunity when considering the future uses within the Gateway Center as they present an established base of

industries that can act as anchors and attractors for others. Though these firms are well established in the study area, the buildings that house them are beginning to near the end of their useful lives and present another opportunity for eventual redevelopment.

Alongside these office buildings, there is also a significant number of Class A office spaces along the eastern edge of the study site abutting Interstate 95 which were built in the mid-2000's. These structures are predominantly above four stories tall, some as high as seven, and are fully capable of suiting the needs of businesses for at least 20 more years. Unfortunately they too have fallen victim to the same maladies of lack of pedestrian connectivity, automobile dependency, excessive parking and lack of interaction between firms.

The sites that are the most challenging yet present the most opportunity are those currently occupied by the former General Electric manufacturing buildings. Currently there are four (originally there were five, the last of which was redeveloped into the Snowden Square shopping center) of these buildings being used for a variety of purposes. The northernmost three of the GE buildings are predominantly currently being used as distribution facilities among other uses. The southernmost GE facility at 7125 Columbia Gateway Drive, is remarkable when compared to the others. It is currently home to Howard County's Department of Social Services, AT&T and most interestingly Earth Treks, an indoor rock climbing facility. Such adaptive reuses may serve as precedent for future adaptive reuse as prescribed by the following three plans presented herein.

I D. Environmental Inventory

The land area available for an innovation district is contingent on the assumptions of the proposed alternatives that are discussed later in this report. Nevertheless, it is understood that in any future development which would create a net increase in impervious surface cover, such a development would also increase the demand on the current stormwater management system in Columbia Gateway. In addition, while there may be strategies to rehabilitate brownfield sites, the brownfield site within Columbia Gateway is seen as a major constraint for potential future use of the site without knowing the potential impacts to the environment and people. Therefore, this plan considers that there are 884 acres of developable land, accounting for the total amount of land within the site, excluding the current stormwater management areas and brownfield sites.

In thinking about the possibility of repurposing stormwater management, Howard County has a variety of established stormwater structures. Therefore, envisioning any future, more extensive development within Columbia Gateway, this plan would propose additional structures in addition to the stormwater management ponds already existing in the site. For example, infiltration trenches, rain gardens, and green roofs are all structures which can increase stormwater capacity. The image to the right is an example of how infiltration trenches can be implemented in sites like parking lots and curb plantings. Furthermore, these structures can be well landscaped to present a favorable aesthetic. The recently completed Savage branch of the Howard County Library system utilizes a network system of roof drainage features, a decorative trough, and a bioretention system to deal with stormwater. This shows the dual nature of how planning for stormwater needs can address environmental concerns and be integrated within the design of sites and public spaces. Stormwater management strategies promote green infrastructure that encompasses technologies to infiltrate, evapotranspire, capture, filter and reuse stormwater for irrigation.

In considering streets, trails and paved open spaces within Columbia Gateway, several strategies will aid in adequately dealing with stormwater. To begin with, provide permeable surfaces in parking lots and sidewalks that allow stormwater to infiltrate through porous surfaces into the soil and groundwater. Secondly, encourage the construction of bioretention areas, which are shallow landscaped depressions that allow runoff to a pond in a designated area, then filter through soil and vegetation. These can be small water ponds aligned along the streets and in open civic areas.

Land Use Inventory		
Land Use Description	Acres	% of Total
Total Area (including roads)	1048.52	100
Total Area (excluding roads)	945.59	90.1
Total Area of Roads	102.93	9.81
Area for Stormwater and Brownfield Parcels	163.86	15.63
Parking	313.79	29.92
Built Area (Covered Area including GE sites)	135.80	12.95
Reserved Open Space	332.14	31.67

Table 3: Land Use Inventory: Source: Studio GIS Analysis



Figure 8: Infiltration Trench Diagram; Source: <http://www.swmm5.com>

I D. Environmental Inventory



Figure 9: Stormwater retention strategies used in Savage Library; Source: <http://patch.com/Maryland/columbia/savage-library-reopens-with-61-million-facelift>

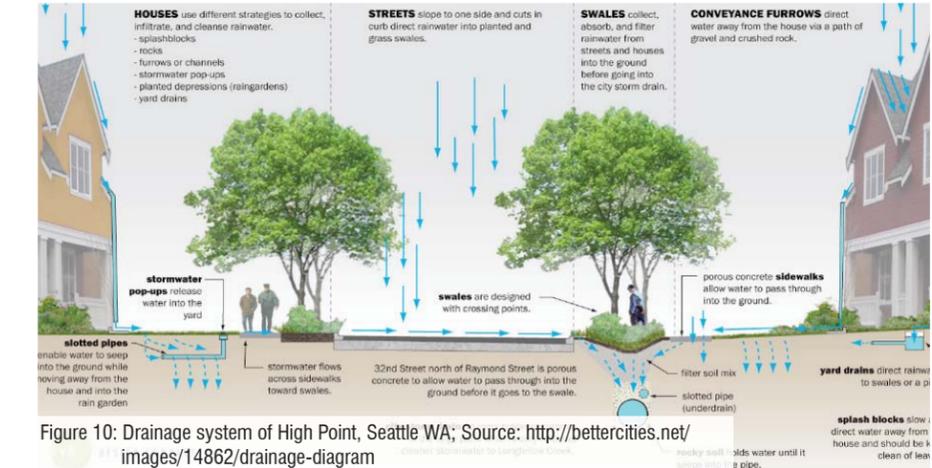


Figure 10: Drainage system of High Point, Seattle WA; Source: <http://bettercities.net/images/14862/drainage-diagram>

Finally, encourage the building of swales and drainage paths or vegetated channels used to direct and transport water. These paths slow runoff, facilitate infiltration and filter pollutants as runoff flows through the system.

In terms of buildings, additional strategies would be offered for stormwater management. A main feature is to encourage “green” roofs, which are covered with vegetation that enable rainfall infiltration and evapotranspiration of stored water. In addition, green roofs also reduce atmospheric pollution, reduce energy costs, decrease the ‘heat island’ effect and create an attractive environment. Additionally, encourage the use of rain barrels and cisterns that harvest rainwater from rooftops for reuse. Rain barrels are placed at roof downspouts, and cisterns store rainwater which can be used for toilet flushing. Finally, to deal with filtration, encourage installation of sand and organic filters that infiltrate water through a sand bed and remove floatables, particulate metals and pollutants before water is discharged to a receiving water body, groundwater or for reuse.

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Part II

Making Columbia Gateway an Innovation District

Potential and existing Innovation District features in Columbia Gateway

II A. Literature Review

Innovation districts are a function of the evolving physical and social form of urban (and suburban) economic structures, and they have been developing organically and through policy and market-based instruments for several decades. Recently, the Brookings Institution has published major research and reports highlighting the value that these districts provide to cities, and identifying a taxonomic system that describes different types of innovation districts and the strategic assets that are built into them. Some of the chief descriptive elements are summarized below.

Innovations districts are...

- Physically compact;
- Transit accessible;
- Technically wired, and;
- Mixed use.

Innovation districts have...

- An abundance of small, entrepreneurial firms with a supportive, risk-taking culture;
- People and firms that are synergistically united with place;
- An emphasis on ‘collisions’ of ideas and networking (an “ecosystem of products, services, companies, people and society that are working together creatively to foster innovation within the city” (Cosgrave et al 2013);
- Leadership and activity that is focused within, channeled through, funded or operated by a political or institutional structure, but with a fundamental dependence on decentralized bodies or bottom-up practices, without formal regulations or limitations, allowing “individual citizens, who are anxious to collaborate with each other” to actively generate ideas, create devices, services, and applications, solve problems, and seek out or “direct investment toward achieving strategic priorities” (Cosgrave et al 2013);
- Incubation, collaboration, R&D, and a continuous evolution of conceptual approach or production techniques;
- Living lab components, with “development of that data into useful information through its links to industry and research and development” transforming products into marketable, appropriate and useful assets for citizens (Cosgrave et al 2013);
- A focus on market creation, add a commercial and social venue for technological and intellectual evolution.

What allows innovation districts to grow and thrive?

- A collaborative leadership network: cooperative design, marketing, and governance;
- A vision, with actionable short-, medium-, and long-term guidance along economic, physical, and social dimensions;
- Strategies to attract, retain, and expand talent and technology;
- Inclusivity, regeneration of distressed neighborhoods, and opportunities for low-income residents;
- Access to capital.

What you can expect to find in an innovation district?

- Economic Assets
 - Drivers:
 - Anchor institutions like universities, research and medical institutions, and/or large firms;
 - Startups and entrepreneurs;
 - Technology-driven industries and applied sciences;
 - Creative fields;
 - Specialized manufacturing.
 - Cultivators
 - Incubators and accelerators;
 - Proof of concept centers;
 - Technology transfer offices;
 - Shared working spaces;
 - High schools, job training firms, and continuing education opportunities.
 - Buildings
 - Stores, restaurants, coffee shops, bars, hotels, and local retail.
- Physical Assets
 - An improved public realm:
 - Parks and plazas;
 - Active streets;
 - Locales of energy with digitally accessible configurations (high-speed internet, Wi-Fi, computers and digital displays);

II A. Literature Review

- Physical Assets
 - A conducive private realm:
 - Modern office developments;
 - Shared lab/work spaces;
 - Affordable microhousing;
 - Common spaces/eating areas.
 - Connecting elements:
 - Walkable and bikeable pedestrian-oriented streets and paths;
 - Activated public spaces.
- Networking Assets
 - Historical and evolving relationships between firms and their employees and leaders;
 - Workshops, trainings, conferences, meetings, networking breakfasts;
 - Blogs, virtual interactive platforms and places;
 - Innovation centers.

Given the reputation of the innovation district as a stimulus for stable and sustainable economic growth, cities tend to encourage their development using tools and strategies such as:

- Tax incentives;
- Infrastructure provisions (could be physical/structural, like housing, utilities, or transportation, or digital/virtual, communications);
- Creating APIs, open data platforms, city dashboards, hackathons, networking events, competitions, etc.;
- A stable forum for interaction, since competition in the innovation marketplace is fundamentally destabilizing.

The Brookings research, spearheaded by Bruce Katz, identifies three model types of innovation districts. They are:

- Anchor-Plus (central urban);
- Re-Imagined Urban Area (fringe urban, waterfront or industrial);
- Urbanized Science Park (suburban).

Complementary and antecedent research accompanies that of Brookings and provides other model types. Four typologies devised by D.A. Hart at the University of Reading are listed below:

- “Cohesive Clusters”: Even early industrial entrepreneurs were conscientious in their effort to “locate in areas of least cost with regard to factors such as transport and labour and therefore benefit from economies of scale” (Hart 2001);
- “New Industrial Districts”: High-tech exclaves on the fringe of or somewhat distance from the CBDs of urban areas rose next, benefiting from the “high value-to-bulk ratio” of their small, lightweight, or virtual products, which have low transport costs but for which speed is necessary to outpace competitors’ innovation;
- “Innovative Milieux”: Modern agglomerations that have returned to urban areas “where established relations between firms and individuals... enhance local creativity and innovative output, through the informal exchange of information and specialized knowledge” (Capello 2010);
- “Proximity Clusters”: Collections of microfirms outside of major urban areas with internal heterogeneity; their continuing clients (for example, health services and defense organizations) promote the innovation that occurs within the clustered firms.

II B. Gateway Innovation District Features

The typologies described above are in no way an exhaustive or comprehensive analysis of the form and function that can be found in the innovation districts of today and tomorrow. The beauty of innovation is that it can take on many different appearances and evolutionary processes. That Columbia Gateway fits somewhat neatly into Katz’s “Urbanized Science Park” model and Hart’s “Proximity Cluster” concept is reason enough to pursue a formal innovation district in Howard County. Columbia Gateway’s tenants are certainly sources of innovation across a number of fields and industries, but there are notable shortcomings that must be considered in any planning efforts.

Who can Columbia Gateway look to as a model?

An aspirational peer for the Gateway might be the Research Triangle Park in the Raleigh-Durham-Chapel Hill area of North Carolina, or academically-anchored projects at the University of Virginia or University of Arizona. Other examples from which to borrow innovation-inspired economic development strategies might be suburban Boston’s Route 128 Corridor or N2 Corridor (‘N-Squared’ which represents the municipalities of Newton and Needham) or the West Innovation District of Dublin, Ohio (outside of Columbus).

What are the innovation district features currently present in Columbia Gateway?

Columbia Gateway is well-positioned for innovation thanks to its cluster of firms with well-trained workers doing high-skill activities and receiving high wages in return. Says Kevin Byrne in a 2014 article from Site Selection magazine:

...research parks offer a site for the development of industry clusters. Like attracts like, and the presence of strong research firms and laboratories draws similar concerns, creating “industrial commons” of companies that work in the same sectors of the economy.

The mix of industries present in the office and industrial community suggest great potential for ongoing innovation. Their different sizes, ownership structures, and the diverse nature of their work create an environment that is ripe for the collaborative tendencies of an innovation district. Columbia Gateway also has a handful of valuable developable parcels that with the right conditions are likely to attract new tenants that further enhance the area’s profile and its capacity to innovate. Some of

these are on prime land fronting I-95 giving maximum exposure.

According to data from the US Patent and Trademark Office, patent output (Table 4) is generally strong in Howard County when compared against local competitors Baltimore and Anne Arundel Counties. Howard also outperforms some urban areas with official innovation districts like Onondaga County, New York (Syracuse Connective Corridor), Madison County, Alabama (Cummings Research Park in Huntsville) and Forsyth County, North Carolina (Wake Forest Innovation Quarter). However, the County lags behind other suburban counties that have recently initiated innovation districts in populous areas, such as Franklin County, Ohio (the West Innovation District in Dublin), Sonoma County, California (SOMO Village), and Durham County, North Carolina (the new downtown Durham ID and part of the Research Triangle Park).

Although no major four-year universities have a main campus within reasonable proximity, training sites and other university affiliates do provide some opportunity for professional development for tenants and local residents. The UMBC Training Center, located within the ovular area formed by the loop road, offers courses in cybersecurity, IT, project management, HR, leadership and innovation, engineering, global studies, big data, and sonography. They provide customizable training to individuals and businesses, have strategic partnerships with Microsoft, Oracle, Pearson, and more, and provide flexible space for meetings, conferences, interviews, and seminars. UMBC is also connected to the One Maryland Broadband Network (OMBN), a fiber optic broadband network that links 1,000+ government facilities and community anchor institutions in every county in the state.

Another outstanding resource is the Universities Space Research Association (USRA). Though the Gateway mainly serves as a home to USRA’s administrative activities and a NASA postdoctoral program, the group is notable for its efforts to innovate in the realm of space technology and its proactive efforts to involve the public in this arena. The group also solicits direct involvement in its work from over 350 universities around the world. Columbia Gateway’s evolution into a true innovation district may make it an appealing destination for a consolidated USRA headquarters since many of its high-tech work occurs elsewhere in the region and country.

II B. Gateway Innovation District Features

Johns Hopkins University also maintains an office in Columbia Gateway, in one of the older areas near the intersection of MD-175 and Snowden River Parkway. It appears as though the Carey Business School has some presence here, but the building is generally advertised as a venue for continuing education services to older adults and a home to JHU’s Center for Technology in Education. This center provides an interesting opportunity for innovation since its mission emphasizes enhancing the quality of life for children through teaching, research and leadership in the uses of technology. Hopkins also has an existing partnership with the state Department of Education.

Lastly, the Howard County Economic Development Authority has worked hard to build and sustain an innovative ecosystem countywide through the tools and resources summarized below. These institutions are not located in the Columbia Gateway.

Maryland Center for Entrepreneurship (MCE) offers a rich, collaborative network of resources for entrepreneurs:

iCat

The Innovation Catalyst (iCat) program offers entrepreneurs key resources and support - mentoring, educational programs, and networking as well as a mail drop and optional dedicated office space. iCat Includes:

- Residents with a dedicated office;
- Businesses connecting remotely as Affiliates;
- Entrepreneurs who connect with our advisors and mentors;
- Leaders who attend a program or just hang out in our cafe.

Based in Columbia, the 25,000 square foot facility that houses the MCE provides space for startups to work, meet, and connect. With an abundance of common space and engaged entrepreneurs, the energy is always a-buzz. Some highlights include:

- Office space with flexible lease terms and office sizes to accommodate your growth;
- Six conference rooms, four with presentation media capability;
- Mail room with private mail boxes, copier, and binding equipment;
- The Innovation Cafe, with comfortable seating, gourmet coffee, and free wi-fi;
- A break room including a pool table for blowing off steam as well as a refrigerator, coffee maker, and microwave.

Patent Output		
Regional Area	Innovation District or Other Area for High-Tech Economic Activity	Total Patents (2000-2015)
Santa Clara County, CA	Silicon Valley	142998
King County, WA	South Lake Union (Seattle)	38947
Middlesex County, MA	Kendall Square, Route 128 Corridor	36073
Wake County, NC	Research Triangle Park	15633
Travis County, TX	Downtown Austin	9937
Fairfield County, CT	N/A	9721
Montgomery County, MD	I-270 Corridor	9334
Wayne County, MI	Detroit Innovation District	9100
Montgomery County, PA	N/A	7897
Allegheny County, PA	Ecoinnovation District (Pittsburgh)	7287
Suffolk County, MA	Boston Seaport District	6896
Fulton County, GA	Midtown Innovation District (Atlanta)	6555
Cuyahoga County, OH	Cleveland Health-Tech Corridor	6441
Tarrant County, TX	Near Southside District (Fort Worth)	5063
St. Louis County, MO	Cortex Innovation Community	4910
Fairfax County, VA	Dulles Corridor	4497
Clark County, NV	Fremont East Downtown Project (Las Vegas)	3799
Durham County, NC	Research Triangle Park	3418
Franklin County, OH	West Innovation District (Dublin)	3235
Sonoma County, CA	Sonoma Mountain Village	3125
Howard County MD	Columbia Gateway	3053
Baltimore County, MD	N/A	2604
Anne Arundel County, MD	N/A	2458
Onondaga County, NY	Syracuse Connective Corridor	2449
Madison County, AL	Cummings Research Park (Huntsville)	1969
Forsyth County, NC	Wake Forest Innovation Quarter	1311
Philadelphia County, PA	University City	886
Hamilton County, TN	Chattanooga Innovation District	588

Table 4: Patent Output; Source: US Patent and Trademark Office

II B. Gateway Innovation District Features

Howard Technology Council (HTC):

The Howard Technology Council (HTC) gives tech companies a forum for engagement, collaboration and education. An active and engaged membership base spans a variety of industries, providing members with access to a diverse collection of organizations. A platform of programs, such as monthly networking events and educational programs are targeted to help grow businesses and business leaders. Roundtables, affinity groups and semi-monthly MCE Speaker Series are great places to connect and learn from other experienced business professionals in Howard County’s innovative, diverse and thriving technological ecosystem. Membership Benefits:

- Reduced and/or complementary registration for:
 - HTC Networking Events;
 - HTC Roundtables and Affinity Groups;
 - MCE Speaker Series;
 - HTC and MCE Partner Events.
- Access to prime/large company small business outreach programs;
- Exclusive sponsorship opportunities for Tech Council events;
- Business and networking assistance;
- Company listing on HTC website;
- Company calendar listing (we will selectively list your events on our website calendar);
- Free or reduced fee access to conference room resources at the MCE.

Business Resource Center (BRC):

The Business Resource Center provides training and counseling for non-tech, services-based, or early-stage companies. Nontechnical, services-based companies, or businesses that are too early for the iCat program can still get support and assistance via experienced guidance and information to help them start and grow. BRC offerings, many of which are free of charge, include:

- Individual Counseling and Referrals;
- Business Education Seminars;
- Government Contracting Assistance;
- Small Business Awards Program.

In-house partners:

- *SBDC - Small Business Development Center:* SBDCs provide services through

professional business advisors such as: development of business plans; manufacturing assistance; financial packaging and lending assistance; exporting and importing support; disaster recovery assistance; procurement and contracting aid; market research services; aid to 8(a) firms in all stages; and healthcare information.

- *SCORE - Small Business Counselors:* SCORE is a nonprofit association dedicated to helping small businesses get off the ground, grow and achieve their goals through education and mentorship. Supported by the U.S. Small Business Administration (SBA) and a network of 11,000+ volunteers, SCORE delivers services at no charge or at very low cost:
 - Volunteer MENTORS who share their expertise across 62 industries;
 - Free, confidential business MENTORING in person or via email;
 - Free business TOOLS, templates and tips here online;
 - Inexpensive or free business WORKSHOPS (locally) and webinars (online 24/7).
- *Procurement Technical Assistance Program (P-TAP):* The PTAC’s mission is to maximize the number of capable U.S. companies participating in the government marketplace by:
 - Providing businesses with an understanding of the requirements of government contracting and the market know-how they need to obtain and successfully perform federal, state, and local government contracts;
 - Supporting government agencies in reaching and working with the suppliers they need.

Any small business may receive PTAC services provided it has a product or service that has reasonable expectation of being procured under government contract or purchase order.

The Accelerator for the Commercialization of Technology (ACT)

It is a ground-breaking partnership between local research institutions and the Maryland Center for Entrepreneurship (MCE) in Howard County. The first MOU was signed with the Johns Hopkins University Applied Physics Laboratory (APL) and others are underway. Through this program, institutions such as APL will identify promising technologies developed by their scientists and engineers with potential commercial applications, and the Maryland Center for Entrepreneurship will use its network of entrepreneurs, guidance and resources to launch successful businesses. The MCE will also provide space in its business incubator, the iCat, to help the new ventures grow and prosper.

II B. Gateway Innovation District Features

Unique Assets podcast:

Recorded in the MCE, the series focuses on the launch of new companies, the growth of existing companies, and the building of business culture involving resident and affiliate companies of the MCE.

Startup 101:

The Class is a practicum, led by industry experts who provide personal lessons related to articulating the value of a business idea as an impactful product. Within these 6 classes and associated pitch day, the focus is on learning the steps needed to complete a clearly understood executive summary and associated TEDCO TCF proposal.

The 3D Innovation Hub:

A facility at Howard Community College offers full-service 3D printing, also known as customized additive manufacturing.

What features are lacking or missing in the Columbia Gateway?

The site currently lacks the physically compact and transit accessible notions that prevail in today’s high-functioning innovation districts. There are also few recognizable shared or open spaces for informal gathering and collaboration. The Gateway has made progress to remedy this by way of the new CIRQL facility, though more can be done to market existing facilities such as those described in the UMBC Training Center, or to bring resources like those available at the MCE to area slated to become Columbia’s innovation district.

Also noticeably absent from Columbia are the high-profile research institutions linked to these districts. A major takeaway for Howard County is the need to shore up the Gateway’s largest candidate institutions, or attract a new one, to anchor the site in order for it to viably function as a future innovation district. Below are just a few of these candidates:

- Universities Space Research Association;
- Johns Hopkins University;
- UMBC Training Center;
- Geisinger Health System (xG Health Solutions)
- Merkel.

There is currently no housing component within the Gateway site, though some of Owen Brown’s mid-density residential developments are close to the far west corner of the study area. Multifamily residences also exist on the north side of MD-175. The GE parcels present an interesting opportunity to link these two areas and form a contiguous housing network that also ties together with the employment centers (Columbia Gateway’s offices and Snowden River Parkway’s retail), creating a more contiguous mixed use community.

Summary	
Columbia Gateway’s Strengths and Existing Assets	Columbia Gateway’s Weaknesses, Gaps, and Opportunity Areas
Presence of technology- and innovation-oriented educational institutions and facilities (USRA, Howard Community College, Johns Hopkins University, UMBC)	Lack of an existing large educational, research-oriented anchor institution
Prevalence of health-oriented institutions (Geisinger, Healthways, Kaiser Permanente, Coram/CVS, BlueCross BlueShield)	Lack of a medical treatment/research facility
Large national or international firms rent space in the Gateway (AT&T, Oracle, SAIC, Honeywell, Sprint, ITT Corp., Nielsen, Mettler-Toledo, Coca-Cola, FEI, Walgreens, Lockheed Martin, TCOM)	Very few of the large firms represented appear to use the Gateway as a major headquarters
Several small, seemingly entrepreneurial firms occupy space in the Gateway	There is no network linking these firms to one another or to the place itself
A great amount of the leasable space is for flex/industrial uses, suitable for specialized manufacturing	The low rent attracts office users who do not leverage the structures to their full potential
Howard County already has institutional support mechanisms for startups and entrepreneurs, including Gateway-based services like the HCEDA and its Business Resource Center, the Columbia Workforce Center, Leadership Howard County	Howard County’s existing institutions for entrepreneurship are largely located outside of the Gateway area (Center for Business & Technology Development, the Innovation Catalyst or “iCat” incubator)
At least one innovation district concept is under development on site (CIRQL shared work space)	The one shared work space is being installed in a low-density office setup with inadequate space or amenities to serve the worker population in mass

Table 5: Columbia Gateway Strengths and Weaknesses Summary Table; Source Author’s information

II C. Transforming Gateway

The individual plans in the next section will discuss in detail some specific strategies to create an innovation district in Columbia Gateway. Some key strategies that can be found in these three alternatives are listed in Table 6 below:

Innovation District Strategy Menu				
Strategy	LOW	MID	HIGH	
PRIORITY 1: Assess and modify existing innovation infrastructure.				
Relocate existing public cultivator assets to Gateway	✓	✓	✓	
Develop mechanisms for short-term donations and sponsorships of space and resources to start-up or non-profit organizations.	✓	✓	✓	
Initiate industry-specific innovation resources to provide more targeted support and technical assistance, such as a health/ bioscience accelerator or defense incubator with federal or other funding/backing		✓	✓	
PRIORITY 2: Arrange and develop flexible open and physical spaces for interaction and innovation.				
Designate shared work spaces across the Columbia Gateway	✓	✓	✓	
- Inventory existing spaces	✓	✓	✓	
- Create a shared reservation/booking system for all potential users	✓	✓	✓	
- Retrofit existing spaces, especially those that are centrally located within the development	✓	✓	✓	
- Build new centers of innovation with enhanced capacity and resources	✓	✓	✓	
Informal makerspace (as in Greenbelt)	✓	✓	✓	
Community garden	✓	✓	✓	
Sculpture gallery, outdoor artscape	✓	✓	✓	
PRIORITY 3: Expand and develop new events and programming.				
Develop a survey strategy for iterative feedback from Gateway tenants (present and future), in order to understand and respond to dynamic programming demand	✓	✓	✓	
Rotate regular Howard County and CA events and programming into shared spaces to boost the profile of the Gateway as an innovation district; collaborate with state and other local agencies to do the same (HC Arts Council, Chamber of Commerce, Rec & Parks, Leadership HC, Community Action Council, Human Resource Society, Rotary Club, Community Foundation, Horizon Foundation, Rebuilding Together, Boy/Girl Scouts)	✓	✓	✓	
Instate monthly, weekly, and annual events such as:				
- Monthly lectures and panels with networking happy hours	✓	✓	✓	
- Weekly networking coffee hours with local industry experts (1 Million Cups)	✓	✓	✓	

Innovation District Strategy Menu				
Strategy	LOW	MID	HIGH	
PRIORITY 3: Expand and develop new events and programming.				
- Quarterly Ignite or Pecha Kucha storytelling series	✓	✓	✓	
- Food trucks/festival, summer tailgates with live music and lawn games	✓	✓	✓	
- On-site 5K/10K	✓	✓	✓	
- Hack-a-thons inspired by issues local to Maryland (opioid abuse, flooding and sea-level rise, housing vacancies and blighted neighborhoods)	✓	✓	✓	
- Daily fitness classes for corporate partners	✓	✓	✓	
- Lunchtime concerts and evening movies	✓	✓	✓	
- Pop-up retail opportunities including farmers markets	✓	✓	✓	
- Regional career fairs	✓	✓	✓	
Cross-corporate fitness or interest clubs (running, cycling, knitting, reading)	✓	✓	✓	
Exhibit space (art, history, technology demos)	✓	✓	✓	
Create official partnerships with local professional and civic networks to use joint spaces (STEM Action, HC Young Professionals Network, National Association of Professional Women, American Association of University Women (AAUW), Business Women's Network of HC, Association of Fundraising Professionals)	✓	✓	✓	
Use technology and social networks to invite new users to the Gateway community (Meetup.com) and connect the existing population of users (Facebook group or other stream)	✓	✓	✓	
PRIORITY 4: Leverage and support existing anchor tenant candidates.				
Promote strategies that might induce an anchor candidate to relocate within the Gateway site		✓	✓	
- Expedite the redevelopment process of older properties such as those on Alexander Bell Drive and especially along the western spur of Columbia Gateway Drive			✓	
- Incentivize institutions like JHU, USRA, Oracle, Leidos, and Symantec to rent and build out newly constructed or renovated facilities more centrally located		✓	✓	

II C. Transforming Gateway

Innovation District Strategy Menu			
Strategy	LOW	MID	HIGH
PRIORITY 5: Recruit a new retail tenant mix to create a 24-hour neighborhood in and around the Columbia Gateway.			
Target established local, regional, or national proprietors of shopping, nightlife, restaurants, and entertainment and cultural institutions			
- Out-of-market fast-casual restaurants (such as Nando's, Sweetgreen, Chophouse, Blaze Pizza, &pizza, Taylor Gourmet, Roti, Chopt, Jamba Juice, Cava Grill)	✓	✓	✓
- Stylish mid-range sit-down restaurants without a local presence (Copper Canyon, Bar Louie, Gordon Biersch, Vapiano, California Pizza Kitchen, Bonefish Grill)	✓	✓	✓
- Small regional franchises with expansion potential (RedRocks, Matchbox, Sidamo, Ben's Chili Bowl, Ted's Bulletin, Georgetown Cupcake, Pete's Apizza)	✓	✓	✓
- Millennial-oriented or other lifestyle retail not already present in the Mall in Columbia (Urban Outfitters, Under Armour, Uniqlo, Paper Source, American Apparel, Bluemercury, South Moon Under)	✓	✓	✓
- Brewery/brewhouse, distillery, or cidery		✓	✓
- Boutique or specialized fitness studios (SoulCycle, Flywheel, Mile High Run Club, VIDA, Trapeze School, Crunch)		✓	✓
Encourage new format retail to distinguish the Gateway area from local alternatives in Downtown Columbia and regional competitors such as Arundel Mills, Baltimore, Rockville, Silver Spring, Owings Mills, and Ellicott City	✓	✓	✓
International food market		✓	✓
PRIORITY 6: Strengthen the suite of amenities and day-to-day needs of a new residential community.			
Traditional housing typologies			
- Single-family attached townhouses	✓	✓	✓
- Multi-family podium apartments	✓	✓	✓
- Housing over retail	✓	✓	✓
- Many high-density housing units			✓
- On-site lower education			✓
Affordable housing concepts	✓	✓	✓
'Innovative' housing concepts			
- Microhousing			✓
- Live/work space	✓	✓	✓

Innovation District Strategy Menu			
Strategy	LOW	MID	HIGH
PRIORITY 7: Use marketing and branding strategies.			
- Distinct web presence including user-friendly website and social media accounts for rapid content sharing and engagement	✓	✓	✓
- Development site and office space database	✓	✓	✓
- Physical marketing and placemaking initiatives	✓	✓	✓
- Create a living lab	✓	✓	✓
PRIORITY 8: Funding and business development strategies			
Catalog available public, private, or other funding mechanisms and develop a user-friendly business resources databases (see CHTC's financial incentives portal)	✓	✓	✓
- Microfinance/lending initiatives	✓	✓	✓
- Commercial acceleration loan funds	✓	✓	✓
- Equipment loan programs	✓	✓	✓
- Municipal or other public economic development loan or grant programs	✓	✓	✓
- Institutional innovation funds/grants	✓	✓	✓
- Angel funds	✓	✓	✓
- Job creation incentive programs (grants, tax credits, etc.)	✓	✓	✓
- Investment/attraction fund	✓	✓	✓

Table 6: Innovation District Strategy Menu; Source: Author's Information

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Part III Land Use & Development Scenarios

Three plans proposing different intensities of development.

III A. Low-Intensity Plan: Columbia's "Gateway" to Innovation

Key Elements

- Extend McGaw Road across Snowden River Parkway into the GE parcels, terminating at the Columbia Gateway Drive loop road; connect McGaw axially to the existing internal road network (Robert Fulton Dr, Alexander Bell Dr);
- Demolish the largest GE property along Snowden River Parkway and replace with mixed-use commercial and high-density residential area (5-story stick construction podium apartments), extended to southwest side of McGaw Boulevard;
- Housing over retail to face Snowden and McGaw;
- Construct a green boulevard along the McGaw Boulevard connecting to Columbia Gateway Drive via a traffic circle at the heart of a new Innovation Core, serving as a central park and open space;
- Retain the re-purposed industrial building featuring Earth Treks and AT&T as anchor sites with an adjacent activity center; this will leverage the boulevard's green space and other nearby innovation infrastructure such as the CIRQL, as well as create a neo-industrial theme within the innovation core;
- CIRQL is retained as demonstration site and focal point around which to plan a loosely designated innovation core district; since CIRQL sits on the edge of the designated innovation core, additional catalyst projects and programming will be developed in the vicinity; a TIF district in the industrial/flex area could support the retention and modernization of light manufacturing and other conforming uses;
- Dense housing (26-40 du/acre) continues along the south side of the McGaw Boulevard and transitions into a townhome typology in the direction of Robert Fulton Drive;
- The Innovation Core will be characterized by new programming rather than new development, though market-driven redevelopment potential exists in the older properties in the industrial/flex area, and denser "innovation" developments in the commercial and mixed use areas will be encouraged; the County could benefit from investing in property in which to relocate its entrepreneurial services and encourage additional tenants and redevelopment projects that enhance the innovation infrastructure;
- Extension of MD-108 to foster market-driven development on I-95/MD-175 corner parcel.

Vision

By tapping into the area's existing assets and promoting an accelerated build-out of the former GE parcels and neighboring sites, the low-intensity plan allows the Gateway to continue moving in a promising direction toward an increasingly innovative future. Through strategic land use recommendations and a robust toolkit of branding and engagement ideas, the plan generates cultural and programmatic shifts that will redefine the Columbia Gateway with few major changes to its current physical configuration. At 1,200 acres, the size of the Columbia Gateway does not lend itself to an innovation district in its entirety. Therefore, nodal areas that form transitional zones between residential, office, industrial, and open spaces will be concentrated centers of innovation.

III A. Low-Intensity Plan: Opportunities and Constraints

Constraints

- The sheer size of the site makes a comprehensive large-scale redevelopment strategy difficult, especially since the easternmost part of the site has newer buildings with sprawling parking lots whose owners may not be as interested in densifying or other new designs or layouts;
- Brownfield site;
- Snowden Square retail area is untouchable;
- Lack of walkability, especially between existing office sites and the redevelopment parcels where the bulk of our recommended activity is to occur;
- Repositioning of existing flex assets or site redevelopment into new flex product is highly unlikely. A \$13-15/SF rent will not produce enough of a revenue increase above the existing site use to justify redevelopment costs;
- Some product types have such negative reasonable letting values (RLVs) that future rent growth alone will not provide an avenue to market feasibility and construction;
- Developers are hesitant to pursue inline retail and office/retail projects due to negative RLV;
- Threat of intensifying traffic congestion;
- Cybersecurity and defense-oriented corporate entities may not be inclined to embrace the collaborative innovation economy.

Opportunities

- Older office, flex, and industrial properties on the northern/western edge of the site, including the GE buildings, are the most ripe for redevelopment given their age and their proximity to existing retail centers and roads;
- Successful industrial site (Pepsi/Jack & Jill);
- Reuse of at least one large industrial building;
- Low commercial vacancy (about 5.6% across all office, industrial, flex properties as of June 2016);
- Significant countywide housing demand;
- Howard County is projected to add 21,000 households through 2030, a figure which is likely far lower than market demand for housing county-wide RCLCO forecasts a structural demand for 1,860 housing units per year, of which 75% would be single-family and 25% would be multifamily units based on historical permitting alone (true demand for multifamily units is likely 2X or more than this);
- Good transportation access and opportune location between I-95 and downtown Columbia;
- Highly educated population.

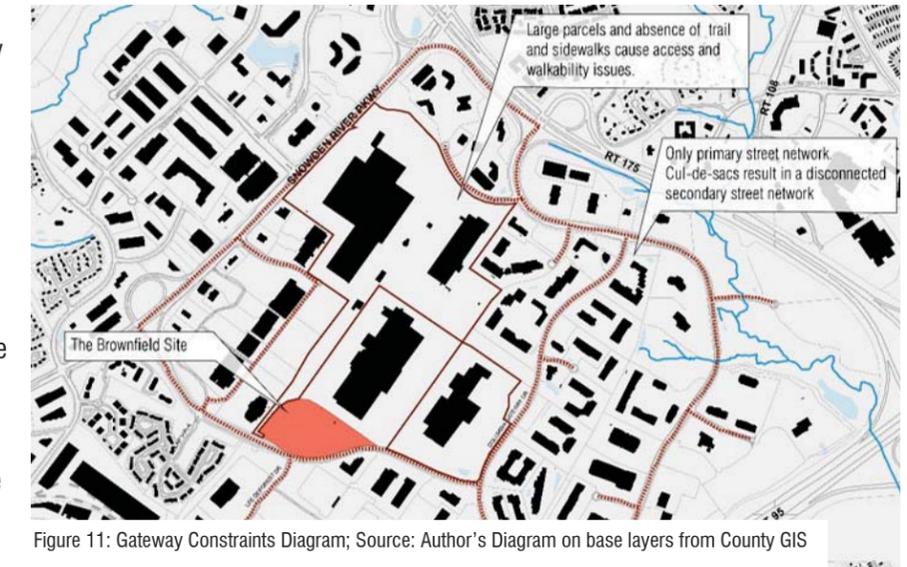


Figure 11: Gateway Constraints Diagram; Source: Author's Diagram on base layers from County GIS



Figure 12: Gateway Opportunities Diagram; Source: Author's Diagram on base layers from County GIS

III A. Low-Intensity Plan: Land Use

Within the development “hub” that this low-intensity plan calls for, there are six proposed land uses. The following pages give a description of the various uses and images of how such uses can be envisioned for their defined areas within Columbia Gateway. In the interest of changing the character and creating a vibrant, innovative-rich environment, this plan recommends strategies which ultimately can be used in a form-based code or implemented into zoning regulations to achieve such a desired physical environment.

Plan Summary		
Total Residential	1961	Dwelling Units Added
	4314	Residents Added
	231	Students added
	4657	Parking Spaces Added
Total (New) Office	424,274.4	Square Feet Added
	1020	Office Jobs Added
	1120	Parking Spaces Added
Total Retail	135,428.04	Square Feet Added
	266	Retail Jobs Added
	677	Parking Spaces Added
Total (New) Open Space	14	Acres of Open Space Added

Table 7: Low Intensity Plan Summary; Source: Author's Information

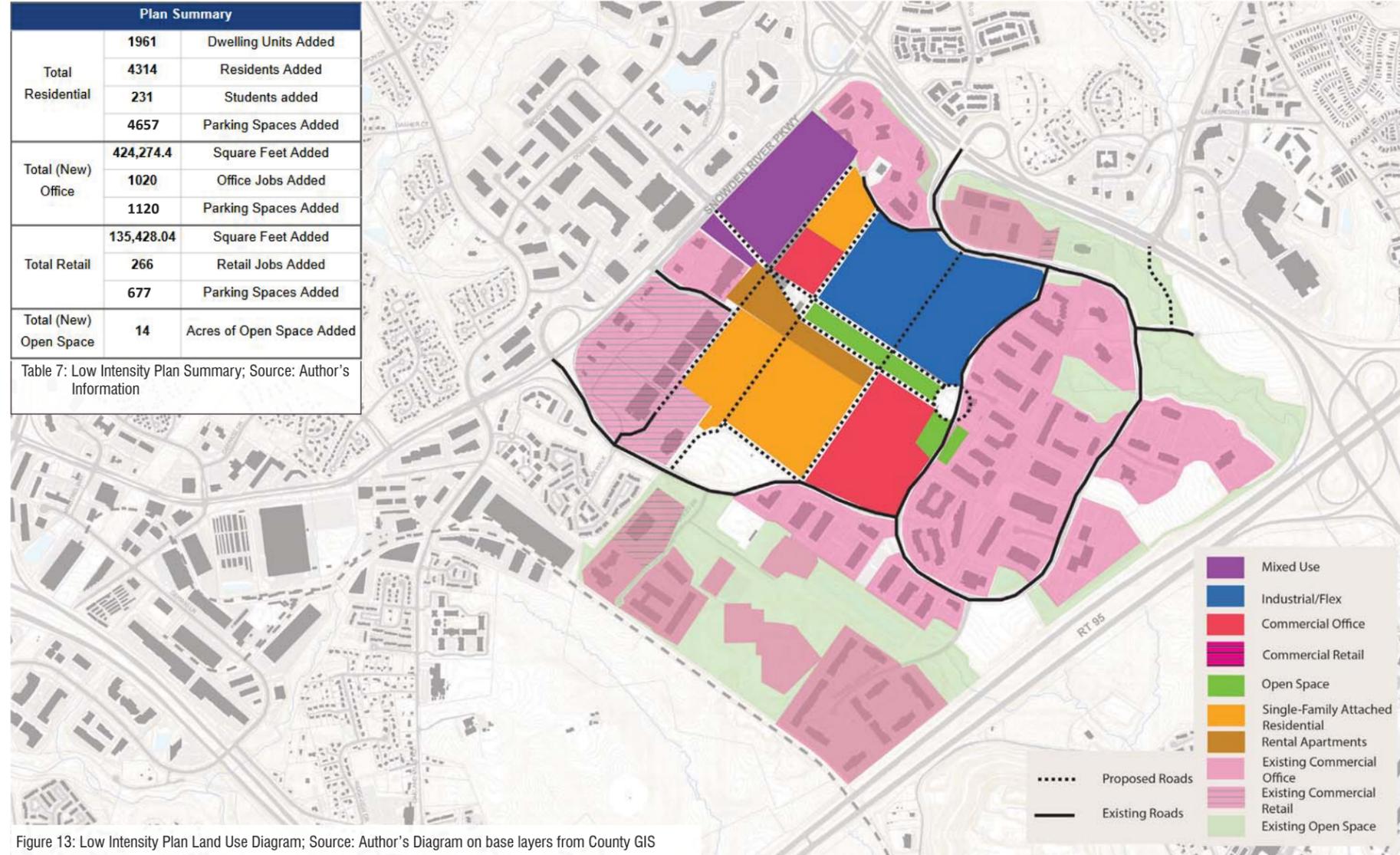


Figure 13: Low Intensity Plan Land Use Diagram; Source: Author's Diagram on base layers from County GIS

III A. Low-Intensity Plan: Plan Information

Residential Development Added								
Use	Total # of acres	Developable area (80%) (acres)	density (DU/acre)	95% Housing (5% Retail) Acres	# of units total	Average household size	# of new residents	# of students added
Mixed Use (High Density)	41.52	33.22	26 DU/acre (high-density mixed use)	30.61	820	2.2	1805	
Rental Apartments (High Density)	19.20	15.36	26 DU/acre (high-density)		399	2.2	879	
Townhomes (Medium Density)	61.77	49.42	15 DU/acre (medium-density)		741	2.2	1631	
Total	122.49	97.99			1961		4314	231

Table 8: Low Intensity Plan: Proposed New Residential Development; Source: Author's Information

Office and Retail Added					
Use	Total # of acres	Developable area (80%) (acres)	FAR	Square Footage	# of jobs created (estimate)
Office	6.09	4.87	2.0	424,274.4	1020
Office/Retail (95% office, 5% retail)	36.20	28.96		63,074.88 (retail only)	124
Mixed Use (95% residential, 5% retail)	41.52	33.22		72,353.16 (retail only)	142

Table 9: Low Intensity Plan: Proposed New Office & Retail Development; Source: Author's Information

III A. Low-Intensity Plan: Plan Information

Notes:

- *Developable area is the total # of acres multiplied by the average amount of developable area for a given site (80%), as recommended by the Howard County Land Development Department in Sabra Wang's Traffic Assessment.*
- *The number of units per acre was determined based on the following range of densities:
Low-density residential: 1-8 DU/acre
Medium-density residential: 9-25 DU/acre
High-density residential: 26-40+ DU/acre
The following calculations are based on a figure of 26 DU/acre for high density and 15 DU/acre for medium-density.*
- *For single-use residential, 100% of the developable area is assumed to be dedicated to residential use. For the mixed-use parcel, 95% is dedicated to residential use, while the remaining 5% is dedicated to retail.*
- *The total number of units is the developable area multiplied by the DU/acre and the % residential.*
- *The average household size was derived from average household sizes of surrounding census tracts, and chosen to best represent the expected type of household the redevelopment will attract. It is expected that Gateway will appeal primarily to young professionals, an assumption shared by the Downtown Columbia redevelopment. This would translate to a smaller average household size than the county overall.*
- *The number of new residents is the number of units multiplied by the given average household size.*
- *The number of students added is the total number of new housing units multiplied by the expected student yield per housing unit (0.118). The expected student yield was calculated as the expected student yield per new housing unit in downtown Columbia, according to the Howard County department of Planning and Zoning. Downtown Columbia is considered a comparable redevelopment project to Gateway.*
- *The number of jobs created is the square footage of developable area, multiplied by 2 to reflect the intended FAR of 2.0 This figure was then divided by 416, which is the number of square feet required to generate 1 new office employee, according to the Planner's Estimating Guide (Arthur C. Clark, FAICP, 1999).*

III A. Low-Intensity Plan: High-Density Rental Apartments (26 units/acre, 19 acres)



Figure 14: Annapolis Town Center Development ; Source: <https://www.bozzuto.com/apartments/communities/1076-mariner-bay-crosswinds/neighborhood>

*Bozzuto Group.
Annapolis Town Centre:
Single-use high-density urban residential building (stick-on-podium construction) with structured garage parking off alley in rear are an appropriate typology to garner more residents to support retail on the first floor of buildings that flank the prime intersection of McGaw and Snowden River Parkway.*

High-density residential units should occupy the extension of McGaw along the Boulevard Park mimicking New York City's Central Park on a lesser scale. Retail is inappropriate on the first level of these buildings since there will be no building defining the street on the other side; instead, residences border a green space with mature trees, jogging paths, and gathering spaces drawing upon Olmsted principles. The park in the middle of the McGaw extension is cohesive in all of the alternatives provided and is a staple to the proposal.

The high-density housing units envisioned for the Columbia Innovation District will be a minimum of 26 dwelling units per acre. The form of this housing typology will be in four to five story buildings with rear garages for resident and guest parking. Pocket parks are encouraged near these buildings and interior parks on larger blocks are also encouraged. High-density housing is recommended for this zone as its location will likely be in high demand. The zone sits adjacent to the proposed Boulevard Park along the McGaw Road extension from Snowden River Parkway to Columbia Gateway Drive, as well as to the existing retail center along Snowden River Parkway. Residential units in this area will also be in high demand due to their proximity to the proposed Innovation District with CIRQL at its center. The Innovation District core is an area poised for job growth and expansion.

III A. Low-Intensity Plan: Medium-Density Townhomes (15 units/acre) (62 acres)



Figure 15: Townhomes at Chatham Sq, Alexandria VA ; Source: <http://cnu.civicactions.net/resources/projects/chatham-square-2007>

Chatham Sq Alexandria, VA:
Traditional rowhouse typology flanking an urban square (green) in the middle. This traditional neighborhood planning scheme should be used in the new urban-style rowhouse residential development in the lower-density housing zone. Narrower units or stacked (one- or two-over-two) duplexes should be used for affordable housing units.

The medium-density housing is similar to a traditional urban rowhouse typology. These townhomes should be three to five stories in height with a top story stepback for a rooftop deck area, and private parking garages in each townhouse accessed by a service alleyway. This typology is ideal for affordable units where the builder can incorporate narrower houses (i.e., two bays instead of three or four) or stacked two-over-two or two-over-one townhomes. This urban single-family attached house defines the street edge with little to no front garden and no backyard. These units roughly provide the same or more return of a suburban 3-to-4 story garden apartment building and reduce significantly the amount of land consumed by open-air surface parking and infrastructure. With community in mind, small pocket parks and interior parks should be provided since there are no private yard spaces. This townhouse typology in the first, low-intensity alternative scheme is estimated to provide 15 dwelling units per acre when factoring in multiple urban parks intermixed with the housing.

This area is designated as a lower-density housing typology in order to allow for a mix of housing typologies within the site, and to function as a possible contingency in the event of a housing market shift or downturn. The zone is perhaps less desirable to developers than other areas within the site, as there are areas on the site with superior highway access and higher visibility.

III A. Low-Intensity Plan: Mixed-Use Residential (26 units/acre) (42 acres)



Figure 16: Mixed-use project at Canyon Boulevard , North Metro Area, Denver Colorado ; Source: <http://www.denver-cityscape.com/photo4.html>

A vertical mix of uses like the building shown in figure 16 is appropriate for the Mixed-Use zone at McGaw and Snowden River Parkway. The low intensity plan provides the option to have up to four floors of residential dwelling units (one and two bedrooms) above one floor of retail uses. However, it recognizes the possibility that not much retail will be supported on the site initially, thus smaller buildings like this one in Denver, Colorado are proposed to build-out the first phase of development on the site at this crucial intersection.

The mixed-use zones of the low-intensity alternative scheme incorporate both horizontal and vertical mixing of uses. Large five-story buildings (stick on podium construction) will be built on the corner of the new McGaw Road and along Snowden River Parkway with the orientation toward each of those streets. A service alleyway will be built behind the buildings for utilities, trash, and structured garage parking for the residences, their guests, and retail visitors. The first floor will be for retail uses with four levels of residential use above it. These buildings will define the street edge with a tree box zone (which incorporates benches, trash cans and street signs) at the curb of Snowden River Parkway, a pedestrian zone on the sidewalk, and a cafe zone for tables. In this mixed-use zone, it is also appropriate to not only use a vertical mixing of uses, but to also have exclusively residential apartment buildings that reduce the build-out square footage of retail but increase the number of residents to support the retail placed along McGaw. These apartment buildings will also be built stick-on-podium, with parking and amenities such as meeting rooms and fitness centers for the residences above.

In terms of developable area, 95% is designated for residential use, with the remaining 5% reserved for retail use. The retail space is envisioned to be a mix of traditional retail, providing basic services and entertainment to the extent that can be sustained by new residents and workers, and if the economy allows, a hotel.

III A. Low-Intensity Plan: Office (6 acres)



Figure 17: Three Park Place- Annapolis, MD, Bignell Watkin Hasser Architects; Source:http://www.bigwaha.com/?avada_portfolio=three-park-place-annapolis-md-2

Jerome J. Parks, Annapolis, MD. The low-intensity scheme proposes urban office buildings along the extended McGaw Boulevard. These buildings are not surrounded by parking, rather they are surrounded by urban squares, retail, residential buildings, and parks. The typology shown in figure 17 is a vertical mix of retail use on the first floor and office uses on the top four floors. This office building typology should promote discussion about how the highest density housing units might provide enough residences on the site to support retail in one or two office buildings that are added to the North of the site. Another option is to permit one level of retail, one to two levels of office, and two to three levels of residential uses in the same building in this zone.

The zone designated as Office includes Class A office buildings, with an estimated floor-area ratio of 2.5. Currently, the site has many suburban-style office buildings built out that are surrounded by large surface parking lots due to a minimum number of parking spots per square foot of office space. This building typology is not recommended for this zone; instead, three to four levels of office floors will sit above a first-floor (ground-level) parking lot and lobby, with potential interior square footage on the street front. Another option is to build five-story office buildings with structured parking behind them that is shared with adjacent residential buildings. This higher-density office typology will blend in with the neighboring high-density residential buildings, and will be easily accessible by the proposed site access improvements. Future office development in the south of the site (inside the Gateway loop road and south of it) should have this building typology instead of permitting the development of many low-rise buildings with high minimum parking requirements.

III A. Low-Intensity Plan: Office (36 acres), Industrial/Flex (64 acres) and Open Space

Office (re-use) (36 acres): The zone designated as Office (re-use) on the south side of McGaw will utilize the existing office and industrial buildings for the remainder of their lifespan in a flexible manner that allows for a variety of office and retail uses. Also proposed is adaptive re-use of warehouse buildings within the zone. The re-use of industrial space by the company Earth Treks will be a precedent for further re-use. As part of the proposed Innovation Core, the goal is to attract more tenants looking to creatively adapt the existing space, as well as to spur engagement and collaboration through programming and the provision of public space between buildings.

Industrial/Flex (re-use) (64 acres)

The zone designated as industrial/flex will host adaptive reuse of industrial buildings and will be the site of new industrial tenants. A Tax Increment Financing district is encouraged, in order to spur industrial redevelopment. As part of the Innovation Core, this zone will host permanent business accelerators and incubators, with month-to-month or short annual leasable space, as well as shared amenities.

Open Space (14 acres)

The site plan for this low-intensity alternative allocates approximately 14 acres of parks and green space (not including smaller pocket parks or public spaces contained inside other zones). The majority of this green space constitutes the Boulevard Park, a park that sits in the middle of the McGaw Road extension. Many of the current matured trees should remain on the site and line each side of the street with bike/jogging paths, squares, furniture such as benches, trash/recycle bins, features such as fountains, and other shrubs and plantings. The planned residential, retail, and office redevelopment will generate a significant amount of pedestrian activity along McGaw. The park will not only serve as an amenity for new residents and workers, but will also function as a traffic-calming device. Bikers and pedestrians can utilize a shared path through the length of the park, reducing congestion and pressure along McGaw. An additional green space is located within the Innovation Core, along the traffic circle. This park will serve as a shared public space for workers, in order to encourage interaction and collaboration among different companies. The park may also be home to programmed events and activities for workers.



Figure 18: Outdoor seating for open space; Source: Unkown



Figure 19: A shared public space for employees; Source: Unkown

III A. Low-Intensity Plan: Areas Outside of the Development “node”

If a given parcel outside of the designated Low Intensity Core is targeted for development by a developer, the Low Intensity plan has a set of recommendations for development based upon existing literature and case studies. These recommendations are not meant to radically alter the current pattern of development, which would be considered more of the purview of the Medium to High Intensity Plans. Rather, this alternative suggests changes that could be made incrementally, cheaply and with great positive benefits to the site. The current development patterns that exist towards the southern and eastern edges of the study area are typical of suburban office parks that were developed in the 1980’s and 90’s. These sites are characterized by large single use office buildings separated by expansive parking lots with a lack of pedestrian infrastructure, attractive land uses and overall character. In order to facilitate a more cohesive, connected and vibrant community where office spaces currently exist, if development were to occur in these areas it would be optimal for developers to adhere to the following loose recommendations.

- Any new development outside of the low-intensity development node should have a floor-area ratio of at least 1.0. This will encourage higher densities and the use of structured parking;
- All new office space development should include the provision of shared public outdoor space, designed in such a way as to encourage public gatherings and play host to programming events amongst various tenants;
- Any new development that is of a higher density than existed previously on the site must be accompanied by improved site connectivity in the form of new connector roads and bicycle and pedestrian paths;
- Roads throughout the site should transition to a “Complete Streets” typology, in which roads become equally functional and accessible for all modes of transit including vehicular, bicycle, pedestrian, and public transit;
- New bicycle and pedestrian paths throughout the site should connect to the regional Howard County trails network.



Figure 20: Public Space Rendering, Envision Alachua (Gainesville, FL), SASAKI; Source: Unknown

III A. Low-Intensity Plan: Innovation Core

Pedestrian-friendly plazas and paths link the boulevard park to residential and commercial developments and also serve as additional gathering spaces that can be flexibly used for publicly or privately sponsored events. Connecting elements of this nature might be included as bonus features alongside new developments, but Howard County might wish to proactively provide amenities like the pictured University of South Carolina (figure 21), to promote and accelerate development and to create much-needed areas for relaxation, reflection, and recreation within the Columbia Gateway.

Other nearby facilities are prominently featured in the Core and function as innovative demonstration projects, such as CIRQL and the creatively re-used warehouse that currently houses the Earth Treks rock-climbing facility and top tenants like AT&T, Nationwide, SAIC, and Cigna. Extending these physical spaces or launching new catalytic projects in the Core’s vicinity will continue to cement its reputation as the innovative heart of the Gateway, Columbia, Howard County, and Maryland itself.

One concept to explore is the AT&T Foundry, an acceleration center that leverages collaborative environments and technological expertise to fast-track ideas into the marketplace. Currently, Foundry centers exist in six locations around the country and in Israel, each with a specific innovation theme (i.e. cybersecurity, software, healthcare, automotive, ‘Internet of things’). Given the presence of AT&T Government Solutions in a large flex/office warehouse that currently sits within the Core district, it may be possible to incentivize the multinational company to convert its facility into the first Northeast-based Foundry, conveniently located in Baltimore-Washington’s attractive high-tech market.



Figure 21: University of SC, SASAKI; Source: <http://www.sasaki.com/project/35/university-of-south-carolina-innovista-master-plan/>

The Core area also overlaps with an existing industrial area, which plays host to the large Jack & Jill ice cream distribution facility and other space used by PepsiCo. Since these are successfully utilized industrial parcels that border some of the older flex properties, the low-intensity plan recommends ongoing industrial zoning and land use, with a specific zone carved out as a high-tech industrial TIF district. This would allow and incentivize modern manufacturing and similarly productive uses to maintain and solidify their position within the Gateway’s innovative ecosystem, either by renting and using the flex buildings as they were intended or retrofitting and/or building new industrial facilities. A TIF district of this nature was also recommended to protect industrial uses near the Fulton Market Innovation District of Chicago and was recently requested to support future development by Howard Hughes in downtown Columbia. Some of the industries that might benefit from this designation and the retention and rebuilding of industrial facilities are:

- Robotics or computers;
- Precision engineering and nanotechnology;
- Aeronautics parts and assembly;
- Pharmaceuticals;
- Craft food/beverage.

A TIF district would also protect a diverse base of jobs and economic productivity for Columbia and Howard County, in one of the last remaining industrially zoned areas with development potential. It allows the Gateway area to further maintain a distinct industrial advantage vis a vis other development areas like Columbia’s downtown. Overlay zoning may also prove useful to distinguish the Core from its surrounding and other employment and activity centers within the county.

III A. Low-Intensity Plan: Innovation Core

Physical Improvements and New Developments:

While the low-intensity plan leaves much open to market forces, a general guideline would be for priority to be placed on redeveloping older properties within or close to the Core, in order to accommodate and facilitate new innovation activity. One of the County's main priorities within the Innovation Core should be developing a new home for county, state, nonprofit, or private institutions that support entrepreneurs and startups. Given the relative compactness of the innovation district in this scenario, it is especially important to consolidate resources located outside of the site area into a more central location or even under one roof. This includes the MCE, iCat, ACT, HTC, BRC, and the Center for Business & Technology Development. By physically linking these facilities with players inside of the Gateway---such as HCEDA, Leadership Howard County, the Columbia Workforce Center, and TEDCO, among others---the Innovation Core can function as intended without requiring any other major physical disturbances to the site. The low-intensity scheme suggests a phasing process that incorporates this recommendation as immediately as possible while also attracting and developing other concepts into the Core area, such as:

- New office space that is available for short-term leases or in customizable sizes (i.e. renting by desk);
- A flexible “hall” building that can be used for regular indoor programming, with rentable auditorium or banquet space, a visitor information center or kiosk, daytime dining options at a cafe or lunch counter, or other informal gathering spaces;
- Private coworking space providers like WeWork and Cove;
- Makerspace, studios, and labs with complimentary amenities such as digital tools, machines, electronics, weekly office hours with discipline mentors, on-site visits and demonstrations, and other resource and tool sharing --- these can be partially member-funded with matching funds from public, private, or nonprofit resources;
- A small project/technology demonstration area that can be used by innovators in the Gateway to show off prototypes and new products.



Figure 22: South Lake Union Discovery Center; Source: <https://www.discoverslu.com/about/>

The South Lake Union Discovery Center shown here in figure 22 is a small-scale facility centrally located in Seattle's innovation district. A similar concept could operate as a featured ‘third space’ in Columbia Gateway, with possible event or gathering room, daytime dining at a coffee shop or lunch counter, a technology/project demonstration area, or an information center for visitors.

III A. Low-Intensity Plan: Innovation Core



Figure 23: Park Center, Research Triangle Park; Source: <http://www.rtp.org/about-us/park-center/>

The Core is characterized by street activity in and around public spaces, including the southeastern edge of the future Boulevard Park. The open space areas that fall within the core area can be utilized for official programming such as farmers markets and other pop-up retail, fitness classes, outdoor movie screenings, and concerts. These opportunities would attract employees and residents and can serve to extend the Gateway's active hours beyond the workday. Stormwater management elements could be incorporated as attractive design features, as in figure 23, which shows an open space rendering in North Carolina's Research Triangle Park.

The innovation district is a “Core” area situated in the center of the site, where a mix of recommended land uses converge and the built-out office park area along Columbia Gateway Drive intersects with the future development areas formerly occupied by GE and other primarily industrial uses. The Innovation Core will be in reasonable proximity to “anchor” candidates like USRA and UMBC. However, the low-intensity innovation district is designed to function without a distinct anchor as the bulk of its activity would be driven by the eclectic group of corporate, nonprofit, and public entities that already populate the Gateway, along with new residents and an influx of small firms.

III A. Low-Intensity Plan: Transportation

Low intensity transportation options emphasize improving accessibility to and within the site. Transportation would include adding two new access points to the site to improve congestion issues while also adding complete streets elements throughout the site to improve the travel experience for all users. We hope to limit the need to use SOVs within the site by improving infrastructure for pedestrian and bike users based on NACTO's complete street design guidelines.

The goals of this transportation plan are:

- Reallocating existing street space/implementing a road diet Columbia Gateway;
- Improving pedestrian connections to the new innovation core, provide wayfinding to attractions/entertainment with walking distances included, improved pedestrian crossings with islands and bump outs and other infrastructure to ensure pedestrian safety and comfort;
- Traffic calming throughout the study area to facilitate the flow of both cars and pedestrians.

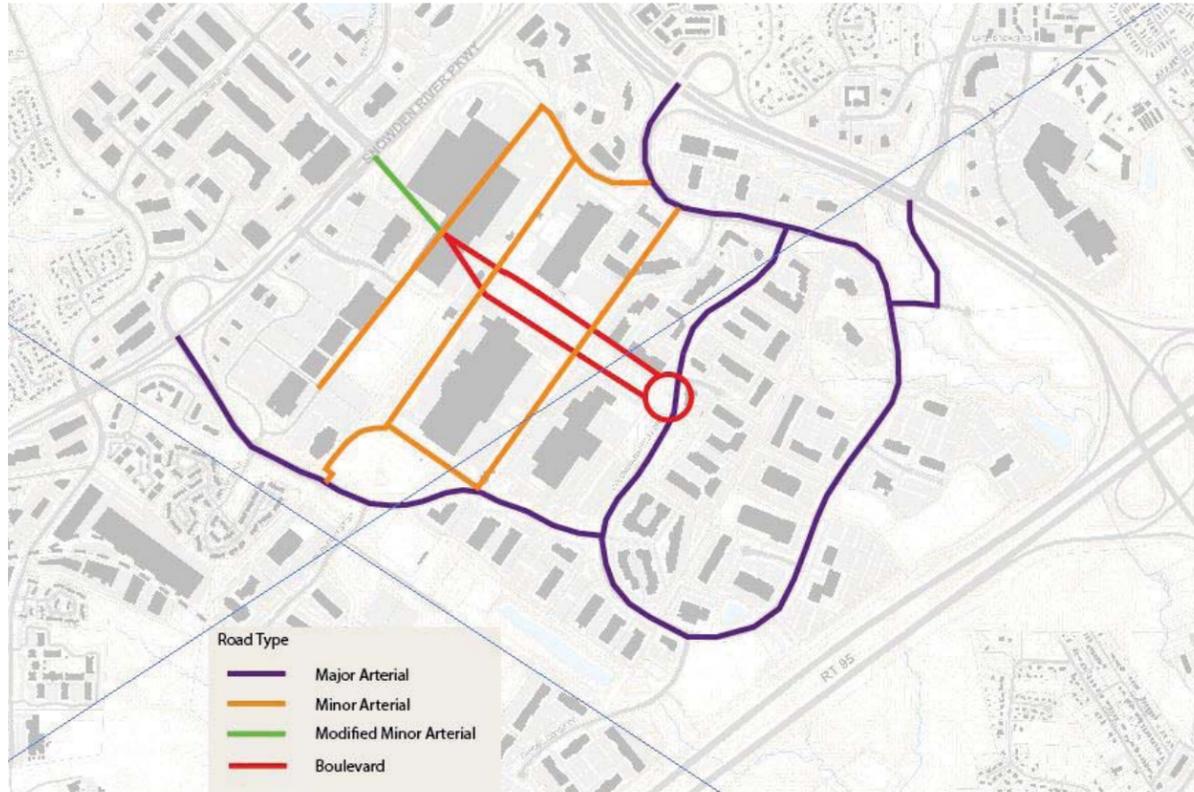


Figure 24: Low Intensity Plan Street Network; Source: Author's Diagram on base layers from County GIS

In order to remedy the existing congestion problem within the site, the Low Intensity plan recommends the extension of Route 108 to John Mcadam Drive. While this investment would present a challenge with the signalization of the existing intersection and its relative proximity to Interstate 95, the addition of a point of entrance and egress from the site would relieve congestion leaving Columbia Gateway Drive at the existing Route 175 ramps. At minimum, the addition of an exit ramp from John Mcadam Drive onto Route 175 eastbound would greatly aid in alleviating the afternoon congestion at rush hour.

A second access point into the study site would be the extension of McGaw Blvd from its current terminus at Snowden River Parkway through the center of the site to terminate at a planned traffic circle that would adjoin to Columbia Gateway Circle. While entering the site from Snowden River Parkway onto McGaw Blvd, the extended street would split and parallel the park area as well as the planned Mixed Use and Office zones. Branching off from McGaw Blvd would be a number of streets extending into the Townhouse, Mixed Use and High Density zones in order to create a more gridded street pattern. This would aid in facilitating pedestrian travel via smaller block lengths, provide additional venues for traffic to dissipate through the site and encourage a more livable, urban environment.

III A. Low-Intensity Plan: Transportation: Bicycle and Pedestrian Improvements

Future consideration ought to be given to the existing CSX line which runs parallel to the Columbia Gateway study area. The conversion of the line to a shared Rail-to-Trail pedestrian and bike path is an attractive option. Connecting the Columbia Gateway center and the surrounding communities to points south with a pedestrian path would aid in facilitating countless car free trips in a much more cost effective manner.

Within the study site, there is currently a severe lack of connectivity between the isolated sidewalks and parcels, forcing individuals to utilize their vehicles to complete even the shortest trips. The Low Intensity Plan recommends that connections between these fragments of sidewalks plus significant investments in shared use paths, sharrows and other pedestrian oriented infrastructure be made immediately. More specifically, Robert Fulton Drive and Columbia Gateway Drive need to have contiguous pathways along the street right of way connecting to planned sidewalk and shared use paths.

In order to help activate the extension of McGaw Boulevard, wide sidewalks and sharrows are necessary to aid in attracting visitors to explore the mixed use areas, facilitating commercial activities that do not require vehicle use and increasing interactions of individuals as elaborated upon in the previous Innovation District section. McGaw Boulevard will be bisected by the strip of open space, with one direction of traffic on each side. There will be three lanes of traffic per side, with a lane of street parking. A shared bicycle/pedestrian path will run through the Boulevard Park, in order to further alleviate congestion along McGaw.



Figure 25: Low Intensity Plan, McGaw Boulevard Extension 1; Source: Section generated from streetmix.net/



Figure 26: Low Intensity Plan, McGaw Boulevard Extension 2; Source: Section generate from streetmix.net/

III A. Low-Intensity Plan: Transportation

McGaw Boulevard and the road extensions into the site will contain significant amounts of parallel parking along both sides of the street in order to mitigate the necessity of having excessive surface parking for businesses to attract customers. These spaces ought to have a maximum of 2 hour parking limits during business hours in order to increase the turnover of spaces and allow for high utilization.

While the townhomes in the study area will have ground level parking and the commercial streets will contain parallel parking, in order to satisfy parking demand the Low Intensity Plan recommends the construction of two structured parking garages. One of the structures should be located within the Mixed Use area just to the south of McGaw Boulevard while the other would occupy space within the High Density area just off Snowden River Parkway. Each of the structures should be no less than three levels tall and occupy an acre of land a piece. While such investments may seem costly and infeasible considering the current land use patterns, the Low Intensity plan will generate significant parking demand between the office and commercial uses. If the Low Intensity plan may transition to the Medium Intensity plan over time, such parking structures would be ideally located to sate the need for parking.

Table 10 displays the parking requirements given the amount of new residential, retail and office development. This Plan assumes that parking requirements will be reduced for Columbia Gateway due to the implementation of Transportation Demand Management strategies. The Howard County Municipal Code grants a 20% minimum parking requirement reduction based on a “Trip Reduction Plan” to be approved by the Maryland Department of the Environment.

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Parking Numbers Based on Howard County Zoning Regulations with 20% Trip Reduction Plan			
Use	Required Spaces (per Howard County Zoning Regulations)	Total Amount (Units or Square Feet)	Parking Spaces (Total Amount x Required spaces)
Residential (Townhomes)	2.5	741	1853
Residential (Apartments)	2.3	1,219	2804
Office	2.64 spaces per 1000sf	424,274.40	1120
Retail	5 spaces per 1000sf	135,428	677
		Total Spaces	6,453
		Total in Sf	1,129,349.30
		Total Acres	25.8

Table 10: Low Intensity Plan: Parking Requirements; Source: Author's Information

III B. Medium Intensity Plan: Columbia's "Gateway" to Innovation

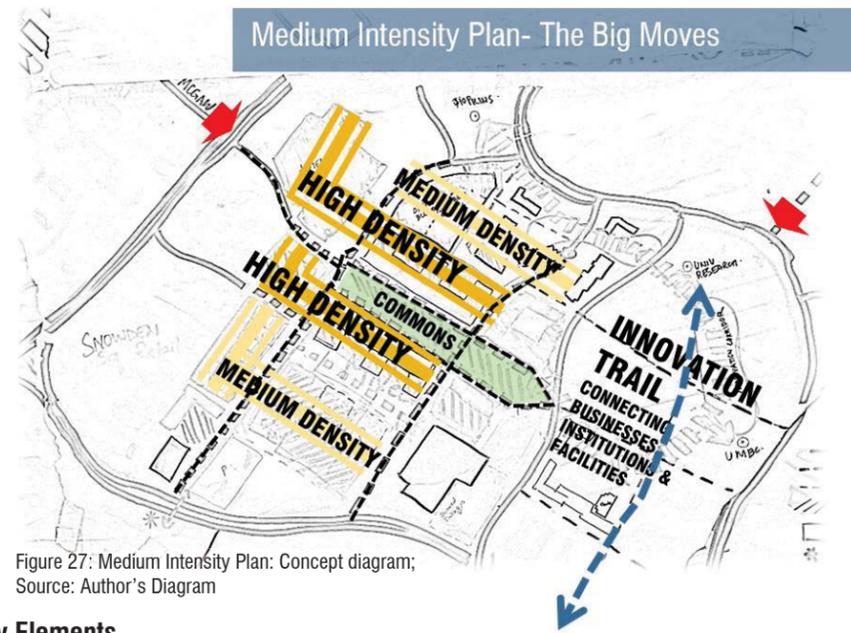


Figure 27: Medium Intensity Plan: Concept diagram;
Source: Author's Diagram

Key Elements

- Subdivide all the larger parcels into smaller ones and tie in all the different uses together;
- Create access to Gateway which includes MD 108 connection, Snowden River Parkway connection, and McGaw extension. Create internal shuttle service to reduce dependability on cars and reduce the number of trips. The transportation plan also includes bike share access throughout the study area;
- Build a mixed-use medium/high density along Robert Fulton Dr, next to the brownfield parcel on the southeast side of McGaw, along Snowden River Parkway to be subdivided into two parcels - a hotel and a high density mixed use area;
- Create an innovation trail to make the area more walkable and pedestrian friendly. The trail will extend from Columbia Drive to McGaw;
- Retain industrial building with Earth Treks and AT&T but develop the adjacent area to create a community space. The flexible space can be used for community activities such as festival celebrations, farmer's market, food trucks (during peak hours) and other pop-up retail, as well as landscaping to promote social activities (e.g. Cortex Commons Innovation District);
- Utilize the area enclosed by Columbia Gateway Drive as a collaborative office space with education institution, research firms, incubator spaces and tie them all together;
- Encourage existing institutions to build on their current presence by opening of surrounding leasable space/ land for redevelopment through zoning.



Vision

The medium density plan envisions creating an innovation district by building on the existing assets to create a balance of jobs and housing. This new development will include a variety of employment opportunities with a mix of international and national corporations, national associations, centers for advanced technology, research and development companies as well as local services. It aims to attract millennials and families by providing diverse housing, as well as a broad mix of regional retail, local retail and recreational amenities, creating a sense of community and giving it a unique character.

III B. Medium-Intensity Plan: Opportunities and Constraints

Constraints:

- Lack of residential use; lacks a of sense of community;
- Lack of walkability and biking in the office park, due to lack of sidewalks; pedestrian connectivity might prove to be one of the biggest constraints in transforming this office park into an innovation district;
- The contaminated Brownfield site which cannot be used due to treatment infrastructure;
- Absence of a gridded and connected network of secondary roads;
- Lack of employee dedicated services;
- Large parcels with less connectivity requiring subdivision;
- Possible competition with Columbia housing and retail market;
- Utility capacity and infrastructure improvements;
- Impervious surface of existing surface parking lots;

Opportunities:

- Location and visibility of a portion of the GE site;
- High current and future housing demand in Howard County;
- Number of vacant industrial properties and surface parking lots which can be utilized for redevelopment;
- Successful industrial site with existing businesses such as AT&T and Earth Treks;
- Existing facilities at Snowden Square which features theater area, retail and Lifetime Fitness;
- Institutional presence in Gateway Office Park such John's Hopkins, University of Maryland Baltimore Campus and Howard Community College;
- The CIRQL which is an existing innovative office space that offers shared collaboration areas and amenities;
- Large parcels and consolidated ownership for land;
- Possible development of employee dedicated retail and shared recreation facility in proximity of office areas of the park;
- Loop roads within the site for an intra-campus shuttle service in the Office Park.

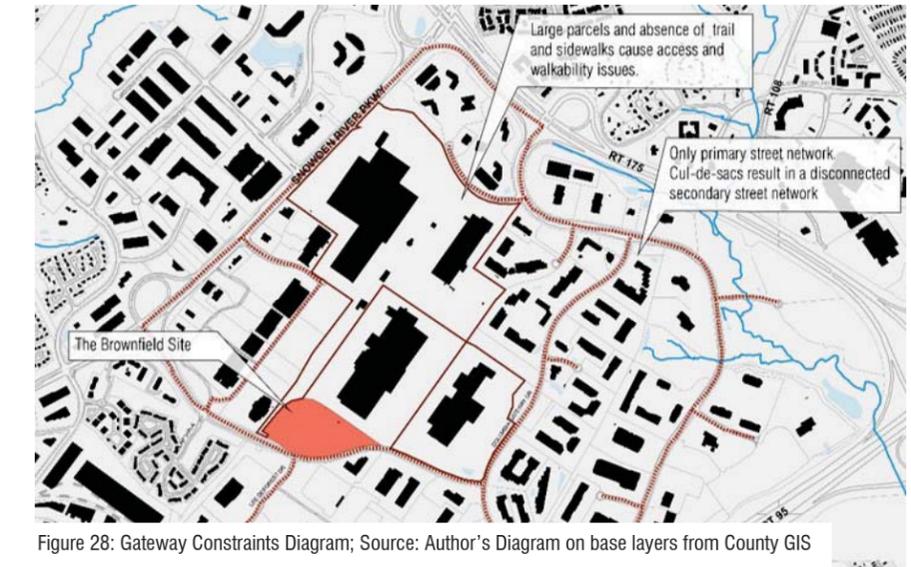


Figure 28: Gateway Constraints Diagram; Source: Author's Diagram on base layers from County GIS

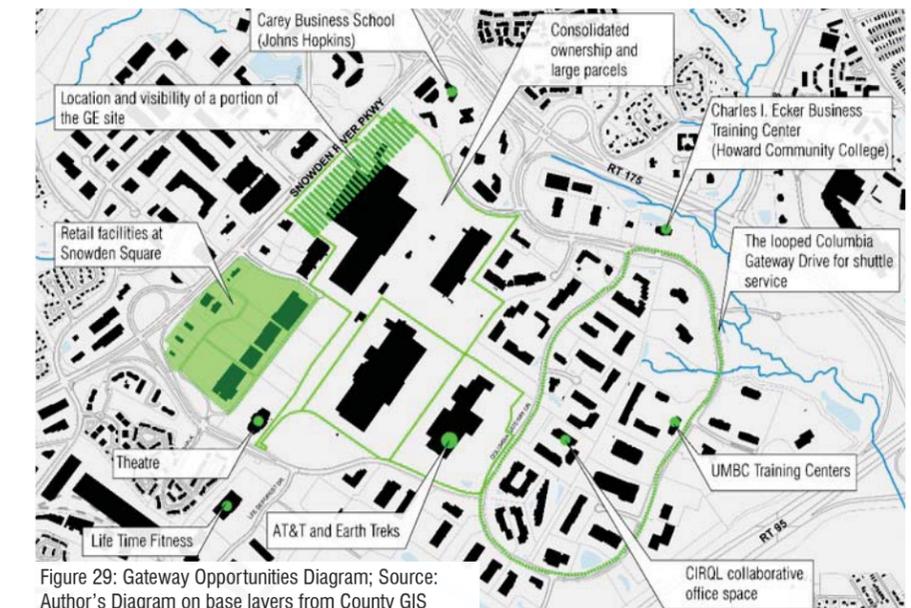


Figure 29: Gateway Opportunities Diagram; Source: Author's Diagram on base layers from County GIS

III B. Medium-Intensity Plan: Land Use

In determining land use options for the medium plan, we looked at a variety of aspects and came up with certain options. The land use plan creates a sense of connectivity through developable area. The following pages give a description of the various uses and images of the uses that could potentially exist within the Columbia Gateway Site.

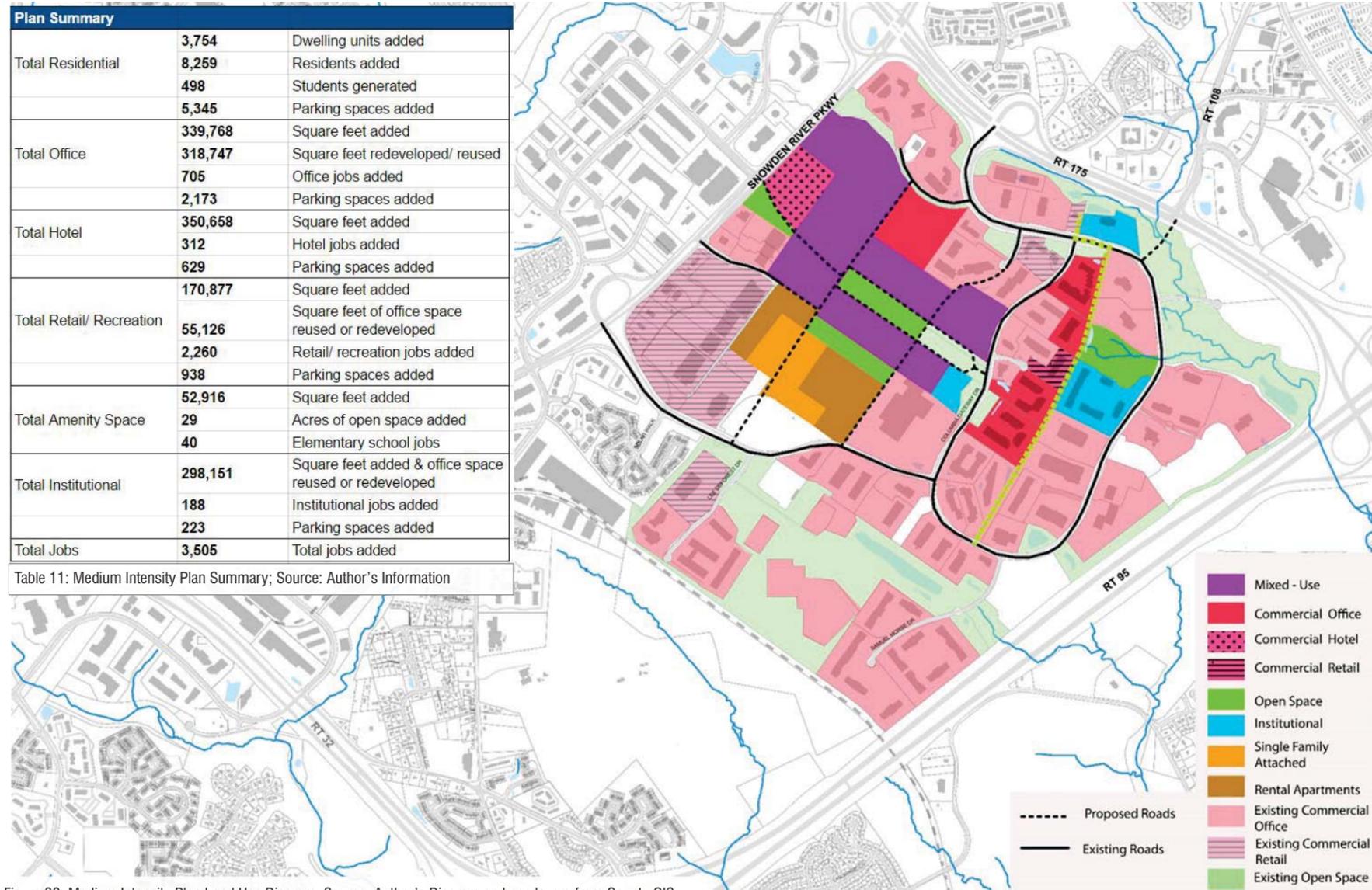


Figure 30: Medium Intensity Plan Land Use Diagram; Source: Author's Diagram on base layers from County GIS

III B. Medium-Intensity Plan: Plan Information

Residential Development Added										
Use	Area (acres)	Developable (80% of Area)	95% Housing (5% Retail) Acres	Residential Density Apts. (DU/ acre)	Residential Density TH (DU/ acre)	Residential (No. of Apts)	Residential (No. of Town Homes)	Retail/ Commercial (max 5% of total area, Sq Ft)	Household Size	# Residents
Medium Density TH	10.1	8.08	7.676		14	0	113	-	2.2	249
Mixed Use- High Density	12.2	9.76	9.272	40		371	0	21,257	2.2	816
Mixed Use- High Density	13	10.4	9.88	40		395	0	22,651	2.2	869
Mixed Use- High Density	6.67	5.336	5.0692	40		203	0	11,622	2.2	446
Mixed Use - High Density	38.8	31.04	29.488	40		1180	0	67,605	2.2	2595
Medium density TH	6.91	5.528			14	0	77	-	2.2	170
Mixed Use- High Density	11.3	9.04	8.588	40		344	0	19,689	2.2	756
Mixed Use- High Density	16.1	12.88	12.236	40		489	0	28,053	2.2	1077
Medium Density apartments	14.9	11.92		30		358	0		2.2	787
Medium Density apartments	9.36	7.488		30		225	0		2.2	494
Total	139.34	111.472				3564	191	170,877		8,259

Table 12: Medium Intensity Plan: Proposed New Residential Development; Source: Author's Information

Commercial & Office Development Added								
Use	Area (acres)	Developable (80% of Area)	FAR	Ground Coverage	Office (Sq. Ft)	Hotel (Sq. Ft)	Number of Jobs	Number of Guestrooms
Hotel	16.1	12.88	0.5	10%		350,658.00	312	468
Office	15.6	12.48	0.5	20%	339,768.00		817	N/A

Table 13: Medium Intensity Plan: Proposed New Commercial & Office Development; Source: Author's Information

III B. Medium-Intensity Plan: Plan Information

Commercial & Office Redevelopment/ Reused (Facilities along the Innovation Trail)							
Note: The numbers are estimated and where required based on arbitrary assumptions							
Facility	Use	Area (acres)	Developable (80% of Area)	Existing Sq. Ft	Number of Jobs Existing	Proposed Sq. Ft	Number of Jobs Proposed
Gateway Employee & Business Facility	Retail/ Recreational	4.31	3.448	55126.00	133	55126.00	551
Innovation Center	Office	4.11	3.288	38660.33	200	38660.33	83
The Tech Square	Higher Education Institution/ Skill Training	15.6	12.48	184051.00	116	368102	232
The Incubation Center	Office	20	16	192525.00	463	192525.00	463
Fox Run Research Business Center	Office	8.13	6.504	87562.00	210	87562.00	216
Business Training Area	Higher Education Institution/ Skill Training	6.91	5.528	114100.00	72	228200	144
			Total	672024.33	1194	970175.33	1689

Table 14: Medium Intensity Plan: Proposed Commercial & Office Redevelopment/ Reuse; Source: Author's Information

Student Generated	
Grade Level	Number of Students
Elementary School	252
Middle School	113
High School	133
Total 498	

Table 15: Medium Intensity Plan: Impact on Schools; Source: Author's Information

Amenities Added		
Amenity	Floor Area (sq. ft)	Area (acre)
Elementary School	49777.19	
Open Space		28.53
Community Center	3138.41	

Table 16: Medium Intensity Plan: Proposed New Amenities ; Source: Author's Information

III B. Medium-Intensity Plan: Plan Information

Notes:

- Average Household Size chosen as per what best represents millennial and young family population households. as per estimates from Downtown Columbia
- 80 % of total acres is developable; the remaining 20% may be considered to include steep slopes, new roads, recreation etc. (Page 16, Columbia Gateway Traffic Assessment, Sabra. Wang & Associates, Inc)
- For mixed use development it assumed that 95% will be residential and max. 5% retail. Given the existing retail on site and projected lesser market for retail (Market Study) only 5% retail has been assumed in mixed use development
- High density mixed use parcels are assumed to have a density of 40 DU/ acre, Medium Density apartment parcels are assumed to have a density of 30 DU/ acre and Medium Density Town Home (TH) parcels are assumed to have a density of 14 DU/ acre. (Table 3-1 Planner's Estimation Guide 2000)
- General Office Area / employee = 416 sq. ft (Planner's Estimation Guide 1999)
- Total Gross Hotel Area per Guestroom = 750 (For a mid-rise 5 story Convention Hotel) (Planning & Programming of a Hotel, Cornell University School of Hotel Administration, 2011)
- Sq ft area/ employee for Lodging services = 1124 (USGBC 2008, U.S. Dept. of Energy Data)
- Number of employees High Turnover (Sit-down restaurant)= 100 (USGBC 2008, Institute of Transport Engineers Data)
- Number of jobs estimated = (sq.ft /416) or (# of employees reported in CoStar Data) whichever is greater
- Expansion of institutional facilities have been proposed (Factor of 2 Arbitrary Number for proposed sq ft and number of jobs)
- Sq. Ft / employee in Higher Education Institutions assumed close to High School Sq,ft/ employee= 1587 (USGBC, ITE Data0)
- For Innovation center proposed number of jobs : Sqft/ Employee for high tech manufacturing =466 (Planner's Estimation Guide 1990)
- For Fox Run Research Business Center for proposed # of employees Sq. Ft/ Employee = 406 (for Research & Development facility USGBC 2008, ITE Data)
- Student Generation Rates for Multifamily apartments for high-density mixed use apartments (0.06-ES, 0.025-MS and 0.033-HS) (Expected numbers for multifamily high-rise units 5-stories or more, HoCo memo Date July 25 2016) , for Medium Density apartments (0.101- ES, 0.045- MS and 0.036- HS) (Ho Co Avg yeilds for new multi-family units) and for medium- density THs (0.0735- ES, 0.0630- MS and 0.0735- HS) (Planner's Estimating Guide estimates for 2020)
- 100 Sq Ft / Student (Planner's Estimating Guide, 2000)
- Neighborhood Park - 2 acres & Community Park- 6.50acres per 1000 residents (Planner's Estimating Guide, 1963)

III B. Medium-Intensity Plan: Mixed Use (40 DU/ acre)



Figure 31: A student resident hall/mixed used facility in Eau Claire, Wisconsin; Source: http://www.commonwealdc.com/property.phtml/downtown_eau_claire_wi_54703/

Figure 31 is from a student resident hall/mixed used facility in Eau Claire, Wisconsin. The plan proposes 4-6 floors of studio to 2 bedroom apartments. Retail may include but is not limited to eateries, cafes, cleaners, salons/barbershops, clothing stores, bars or specialty boutiques.

Mixed Use High Density: (40 DU/ acre, 98 acres)

The mixed used high density residential land use would encompass four to six story apartment buildings with the ground floor being commercial. This area would be along the McGaw Road extension. This would allow the area to increase the number of residents within Columbia Gateway while creating an activity hub along the one of the main thoroughfares on the site and would be highly walkable for the residents in the area.

III B. Medium-Intensity Plan: Townhomes (14 DU/acre, 17acres)



Figure 32: Knuston Townhome Development in Brambleton, VA; Source: <http://www.brambleton.com/townhomes/>

Townhomes in the community would include three to four levels with rooftop terraces. Parking may be on-the-street or in attached garages. Figure 32 is a concept image taken from Knuston development in Brambleton, VA. This development provides families and singles with entertainment space that would otherwise be limited due lack of a large yard space in higher-density apartment developments.

Moderate Density Townhomes: (14 DU/ acre, 17 acres)

This site would implement single-family attached townhomes. It would bring more families into the area that may still want to be a part of the activity hub in the area. Families or singles alike would be able to enjoy the shopping along the main street as well as the greenspace areas. The townhomes could also be a part of the county's Moderate Income Housing Unit (MIHU) policy, in which 10% of the residential units are required to be affordable to households within the moderate-income threshold. Townhomes additionally carry the benefit of giving families more options outside of apartment-style housing.

III B. Medium-Intensity Plan: Apartments (30 DU/acre, 24 acres)



Figure 33: New apartment development in Avondale Arizona; Source: Unknown

Figure 33 shows design options for new development in Avondale, Arizona. The apartments would offer more space to accommodate families, empty nesters, or millennials that may be used to the greater amount of space that suburbia often offers. Retail is not appropriate in this area due to scale and parking.

Medium Density Apartments: (30 DU/ acre, 24 acres)

Medium density apartments would provide a happy medium between being in a more urban style housing type such as the mixed-use apartments without owning a townhome. The units will be located to the back of the current shopping development and the new McGaw Road extension. These large 2-3 bedroom apartments would be 2-3 floors and have large windows for a more airy feel. The buildings could be equipped with a lobby area as well as small community room for residents. This would give the residents an opportunity to have a gathering space if the building does not come with balconies or an outdoor convening space. The building could possibly accommodate levels of structured parking or have split level parking as shown in the above image.

III B. Medium-Intensity Plan: Hotel (16.1 acres)



Figure 34: Aloft hotel in Norfolk, Va; Source: <http://www.loftchesapeake.com/>

Figure 34 is from the Aloft hotel in Norfolk, Va. It has 136 rooms, a 24-hour fitness center, an indoor swimming pool, meetings rooms, a business center and more. The hotel would be positioned off of Snowden River Parkway and would be visible from MD-175 as well. It would be a step up from the local hotels in the area, providing an affordable luxury option. The hotel could have surface parking or parking that could be supported by an adjoining parking structure with the mixed use high density apartments nearby.

Hotel Space: (16.1 acres)

A hotel would be important to accommodate out of towners visiting firms and institutions within the area as well as guests of local residents. This plan proposes a smaller hotel chain such as an Aloft or LeMeridian with about no more than 150 rooms. This option would be a best fit for the area given the presence of competing hotels nearby, location, unforeseen economic forces, and consistency of the community's design and scale. These include but are not limited to amount of competing hotels within the area, location, unforeseen economic market forces and community design scale consistency.

III B. Medium-Intensity Plan: Office (15.6 acres)



Figure 35 is a concept image of the Southwest Educational Development Laboratory Headquarters in Austin, Texas; a three level office building with reception area, conference room, meeting rooms and open space concept for cubicles.

Figure 35: Southwest Educational Development Laboratory Headquarters in Austin, Matdor Project Solutions; Source: <http://matadorps.com/southwest-educational-development-laboratory/opment-laboratory/>

Midrise Office Space: (15.6 acres)

Although the Columbia Gateway has plenty of office space, adding newer and updated office space may attract more firms and businesses into the area. This could be used as “standard” office space or more creative spaces for firms to collaborate.

Due to the amount of surface parking within the area, a parking structure may not be necessary. The other parking zones on site may also support the need to not add parking around the office space. Future office development within this area should use this style of office structure and not the low-rise building structures currently in Columbia Gateway.

III B. Medium-Intensity Plan: Community Space (3 acres)



Figure 36: Stoddert Elementary School & Community Center in Washington DC, Perkins Eastman; Source: http://www.perkinseastman.com/project_3405952_stoddert_elementary_school_community_center

Community space: (3 acres)

The community space within Gateway should include an elementary school/community center.

Figure 36 is from the Stoddert Elementary School & Community Center in Washington DC designed by Perkins Eastman. This school facility has been designed for after-hours use by the community and houses the offices of Parks and Recreation.

Figure 37 is from proposed development for Central Park in Mishawaka, Indiana. It consists of a playground area and water features. These spaces are an example of how building open space can also be used as a social space.



Figure 37: Central Park Mishawaka, Indiana; Source: <http://sandiego.eater.com/2014/2/13/6279933/beer-garden-coffee-food-trucks-more-fill-quartyard>

III B. Medium-Intensity Plan: Open Spaces (18.4 acres)

Greenway: (5.59 acres)

Figure 38 is a proposed concept for the Isles Residential area in Canada. It includes a bikeable pathway and greenspace for a community garden and seated areas with furniture such as benches, tables, and trash/recycling bins. Such a greenway may also feature other things such as fountains or water features, and planting and trees for shade. A greenway for Gateway would go between the high density apartments and the medium density apartments. It would bridge the lower density residential units and the higher density residential units, while connecting the area through the proposed plan from one end to other. It would connect the residential area with the office community around the loop road.

This area would reduce some of the congestion on McGaw Road by allowing people to possibly walk or bike to work if they lived in the area or if not, to have lunch there. The area would contribute to livability in Gateway. It would create a unique use of greenspace that would otherwise be filled with trees and/or shrubbery. It would provide an opportunity for the population to lead healthier lifestyles by creating a walkable and bikeable environment.



Figure 38: Isles in Residential Areas, Ottawa River, Windmill Development Group; Source: <http://ottawacitizen.com/news/local-news/algonquin-panelists-to-debate-zibi-project-at-arboretum-festival>



Gateway Commons: (12.9 acres)

The Gateway Commons would consist of the green space between the two boulevards that connect the McGaw Entrance to Columbia Gateway Drive. The commons will consist of a variety of different uses. These may include a farmer's market, movie screenings, eating areas and parks.

Figure 39 is from the Commons space at the Cortex Innovation District in St. Louis.



Figure 39: The Commons, Cortex Innovation District; Source: <http://cortexstl.com/the-district-old/innovation-centers/>

III B. Medium-Intensity Plan: Innovation Trail

Columbia Gateway currently has multiple small institutional and training facilities. The absence of a major anchor institution is one of the major constraints in development of an innovation district in this area. The site also lacks a single large business that can act as an anchor for this district.

Taking into consideration the absence of such major anchors, the medium intensity plan focuses on increasing physical and social connectivity between the existing firms, as well as creating collaborative office spaces and open spaces. The plan also introduces unique programs that will act as common amenities for employees within the Gateway site.

The Innovation Trail system will have a characteristic landscape encouraging people to bike, walk or take electric golf cart shuttles to access amenities, social spaces, institutions and businesses around it. Following are the main facilities proposed along the Innovation Trail.



Figure 40: Cafeterias at Googleplex, Mountain View; Source: <http://www.bizjournals.com/sanjose/news/2013/07/11/mountain-view-restaurants-googles.html>



Figure 41: Bowling Alley at Googleplex, Mountain View; Source: Author's Photograph

1. Gateway Employee & Business Facility:

This facility includes different employee recreation services (indoor sports), common dining area or food court, diverse types of networking spaces (cafe, restaurants, meeting and conference spaces, other event spaces) and state of the art open spaces.

The building is essentially a smaller scale version of spaces like Park Center at Research Triangle Park and Googleplex at Mountain View. Figures 40 and 41 illustrate the food court and bowling alley facility at Googleplex Mountain View. These are few of the amenities on the Google site.

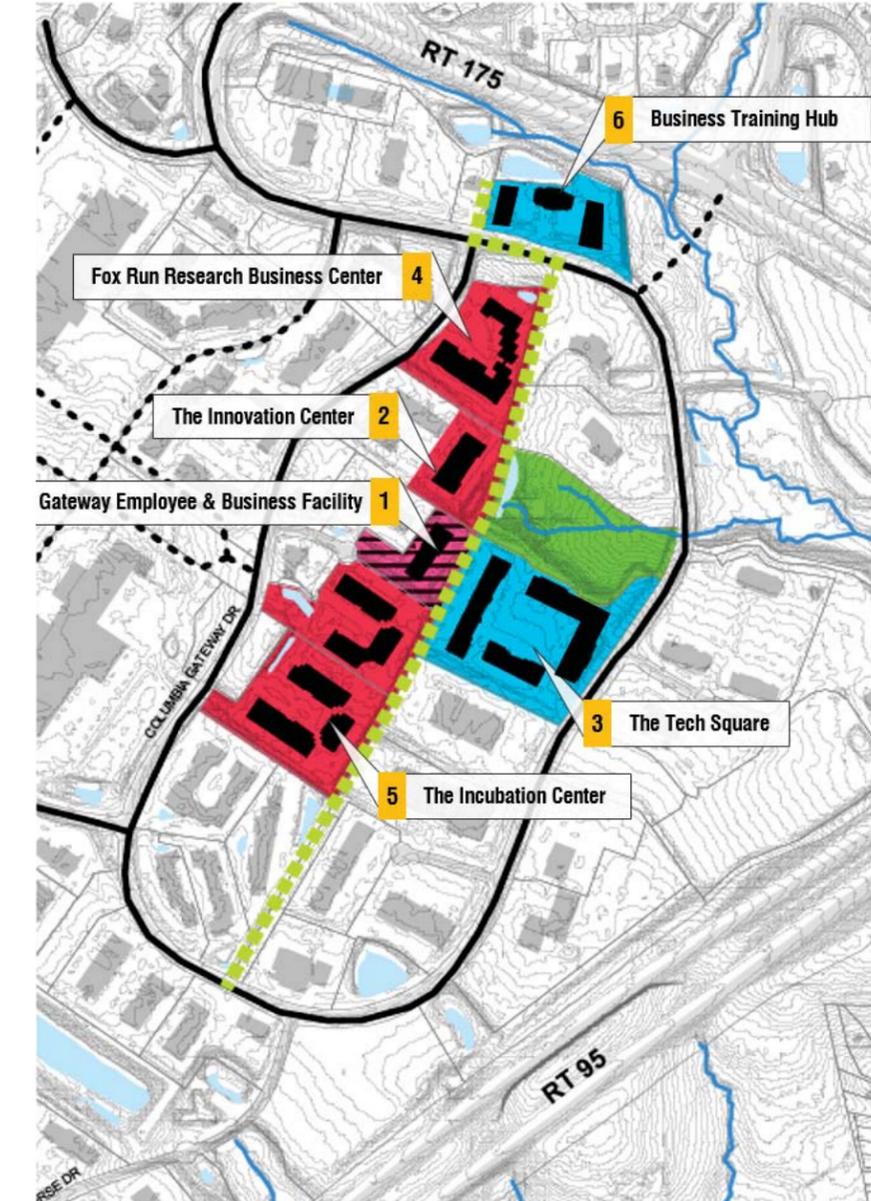


Figure 42: Medium Intensity Plan, Innovation Trail; Source: Author's diagram on base layers from County GIS

III B. Medium-Intensity Plan: Innovation Trail

2. The Innovation Center:

The Center will include maker space, workshops and lab spaces that can be rented by the hour, day and month. These spaces will attract new programming facilities to house start-ups and other small businesses.

Figure 43 shows the Maker Space at KOIL workplace in Kashiwa-shi Japan by Naruse Inokuma Architects. A maker space facility usually includes shared use of fabrication equipments like laser cutters, 3D printers, CNC machines and other prototyping machines.



Figure 43: Maker Space' KOIL, Japan; Source: <http://www.designboom.com/architecture/naruse-inokuma-architects-koil-japan-06-27-2014/>

3. The Tech Square:

The Tech Square will include existing and new tech-related training institutions and services with common open space. UMBC Training Centers is located here and a considerable expansion is proposed for UMBC programs in order to develop this space as a center for tech skill learning and business development in the Area.

Figure 44 shows an actual Tech Square developed at Georgia Tech. This space at Scheller College of Business helps to bring together professionals in business and technology at Georgia Tech.



Figure 44: Tech Square, Georgia Tech; Source: <https://www.scheller.gatech.edu/degree-programs/undergraduate/admissions/visit.html>

4. Fox Run Research Business Center:

The Center will be the home of existing Universities Space Research Association along with other new research businesses requiring workshop/ lab space.

Figure 45 depicts spaces that house small research businesses. These spaces are usually a mix of office and workshop space. They tend to occupy flex office areas which are usually separated from other businesses. Having a new center offering similar spaces to house multiple small research businesses and including common areas may increase collaboration among start-ups.

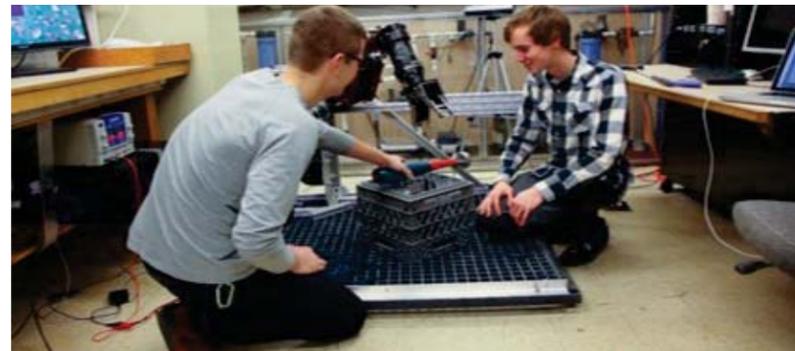


Figure 45: A UW startup lab space; Seattle ; Source:<http://www.washington.edu/news/2014/04/07uw-startup-creates-underwater-robotics-with-a-human-touch/>

III B. Medium-Intensity Plan: Innovation Trail

5. The Incubation Center:

Further developing the innovative activity in CIRQL involves adaptation of existing buildings into short and long term rentable office spaces with collaboration areas and incubator spaces.

Figure 46 shows the shared common area of CIRQL located at 7134 Columbia Gateway Dr. This facility also contains small and large office rental spaces, and meeting rooms and spaces with group seating and white boards for collaborative work. These incubation spaces have different layouts catering to both large and small groups.



Figure 46: CIRQL, Columbia Gateway, MD ; Source: Author's Photograph

6. Business Training Hub:

The site already includes the Howard Community College Charles I Ecker Business Training Center which can act as an on-site hub for short and long term business training. Hence a considerable expansion has been proposed which can be achieved by consolidating surface parking. This will create space for new buildings and open space. The existing county office may be shifted to a different location.

Figure 47 is from University of the District of Columbia. It has a green court surrounded by campus buildings. The court acts as a great interaction space for the campus.



Figure 47: Univ. of District of Columbia ; Source: <http://colleges.usnews.rankingsandreviews.com/best-colleges/dc>

III B. Medium-Intensity Plan: Transportation

The current transportation system of the Gateway Office Park will not support the changes that this plan is implementing. The addition of residential units and a dramatic increase in retail will create a large increase in automobiles and pedestrians moving throughout the area. Not only will the current system need to be upgraded to support this demand, but it will also need to be expanded.

The goals of this transportation plan are:

1. Provide easy access to the park
2. Create a walkable and bikable environment
3. Allow easy movement of automobiles through the park

Figure 48 displays the proposed transportation plan. There will be an extension of MD 108 that connects to Columbia Gateway Drive. This provides another access/exit point to the park and helps alleviate congestion at the current access points. Automobiles coming from I-95 and east will no longer have to use the MD 175 intersection to access the park. For those going to the Innovation Trail, they will not have to drive through a large portion of the park to access the area. The addition of this extension will reduce the congestion as cars exit the park, as they will no longer have to use the 175 intersection as well.

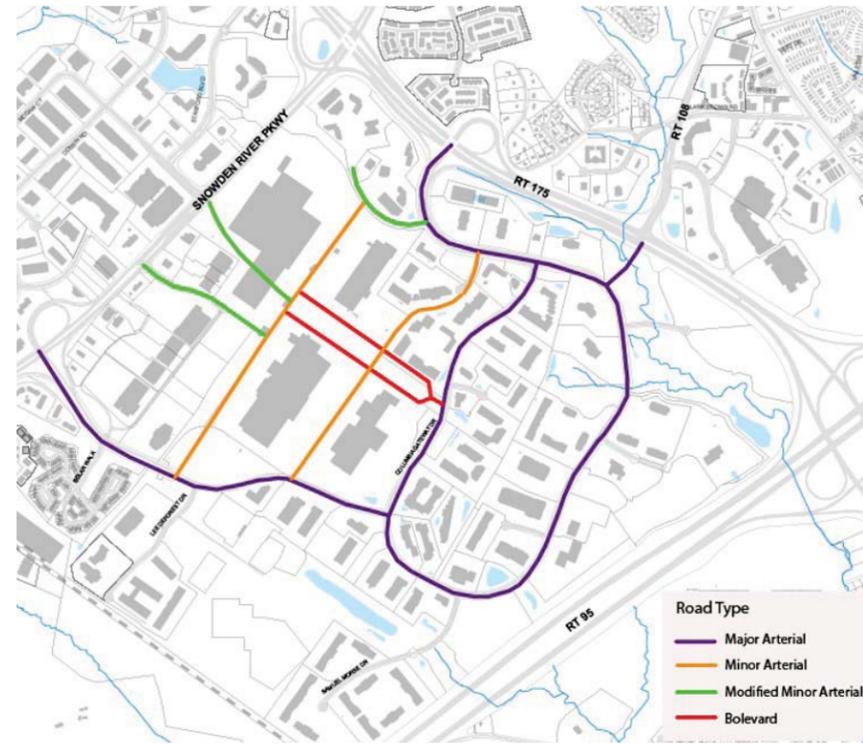


Figure 48: Medium Intensity Plan Street Network; Source: Author's Diagram on base layers from County GIS

Major Arterial: The goal of Robert Fulton Drive and Columbia Gateway Drive will be to get automobiles into the park and quickly move them throughout. While most of the roads for this part of the plan are already created, they will require upgrades. No on-street parking will be provided on these roadways, as the main goal is to provide access. Sidewalks, lined with trees and street lamps will be on both sides of the roadways to create a walkable environment. The roadway will need to be widened to make room for bike lanes. There will be a tree-lined median for the road system as well.

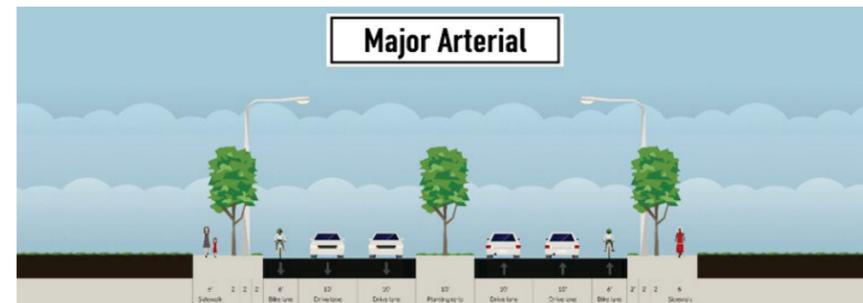


Figure 49: Medium Intensity Plan, Major Arterial Street; Source: Section generated from streetmix.net/

III B. Medium-Intensity Plan: Transportation

Modified Minor Arterial:

There will be two enhanced entrances to the park coming off of Snowden River Parkway. Snowden Square Drive will be extended and a new road beginning at Snowden River Parkway and McGaw Road will bring automobiles, bicyclists and pedestrians to the newly developed mixed use section of the park. These entrances will reduce the strain on the already established access points of the park and help facilitate incoming and outgoing traffic. This same road type will be implemented in the north section of the park to connect Columbia Gateway Drive to the mixed-use area. This provides visitors with another entrance and exit point to the area.

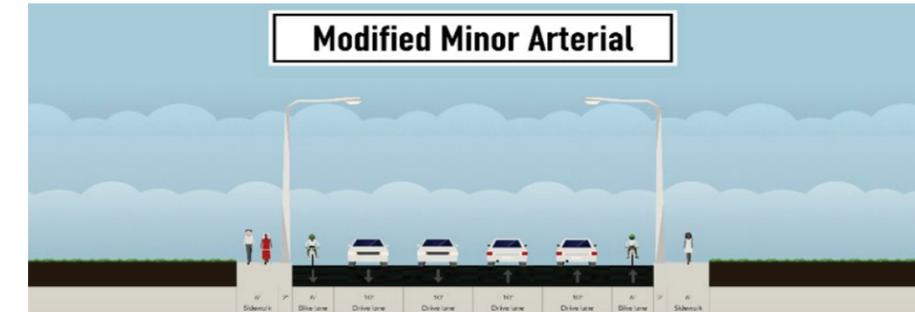


Figure 50: Medium Intensity Plan, Modified Minor Arterial Street; Source: Section generated from streetmix.net/

Minor Arterial:

Two roads will be created to bisect the mixed-use area of the park. These roads will be utilized to bring traffic off of Columbia Gateway Drive and Robert Fulton Drive. These roads will provide a way to quickly get from one side of the park to another, a connection that is currently lacking in the park. Each direction will have two lanes to help facilitate the amount of travel the roads will support in order to serve the residential and mixed-use area. There are existing roadways for parts of these roads but they will need to be updated and in some cases, created. As with the rest of the road system, there will be dedicated bike lanes along with sidewalks. These roads will also offer on-street parking to alleviate parking lots and structures.

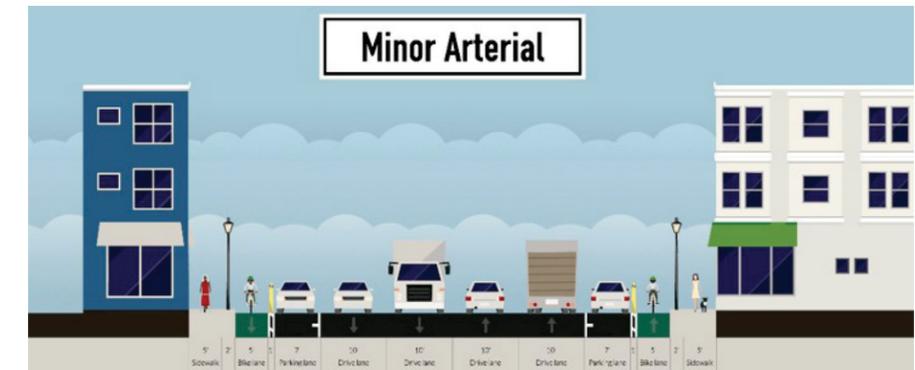


Figure 51: Medium Intensity Plan, Minor Arterial Street; Source: Section generated from streetmix.net/

Boulevard:

The main attraction of the mixed-use area will be the boulevard. This is where everything will be centered and will bring the greatest amount of people. The transportation system has been set up to provide easy access to this area. The boulevard will feature wide tree-lined sidewalks, dedicated bike lanes, on-street parking and a wide planting strip median. While automobiles can access the boulevard, it is designed to have a more pedestrian feel. Lanes are narrower than the rest of the park in order to reduce automobile speed in this section. Sidewalks on the boulevard are designed to be wider with trees providing a barrier to the roadway in order to encourage walking. The separated bike lanes encourage bicycle use in this area as well.

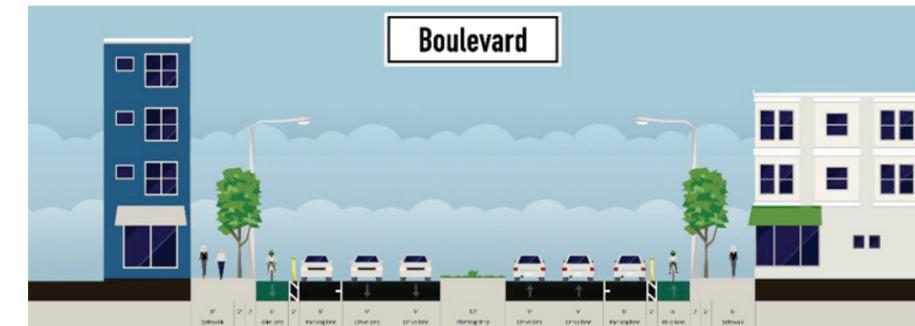


Figure 52: Medium Intensity Plan, Boulevard; Source: Section generated from streetmix.net/

III B. Medium-Intensity Plan: Transportation

Shuttle:

With the increase in employment and the addition of residential development, an internal shuttle service can provide transportation within the park. We are proposing for Gateway Office Park to fund this service in order to attract residents and businesses to the park. As seen figure 53, the shuttle route will loop through the park and have stops in strategic locations to provide access to a variety of areas. The shuttle will allow those working in the Innovation Trail area to quickly get to the mixed-use zone of the park in order to access the amenities. Providing the shuttle will also allow people to park anywhere within the site but still have easy access to their destination.

Bicycles and Pedestrians:

As can be seen by the road types proposed in this plan, a large emphasis has been placed on walkability and bicycling. This is something that is largely lacking in the current park. While there are some sidewalks, connectivity throughout the park is a problem. This plan makes it possible to safely walk to any area in the park on sidewalks or the Innovation Trail. Bicycling is something that is not supported by the current transportation plan. All roads for this plan offer some type of bike lane. With the addition of housing to the park, it is important that residents will have the ability to easily travel through the park. Access points to the park also have bike lanes to encourage employees to commute by bicycle.

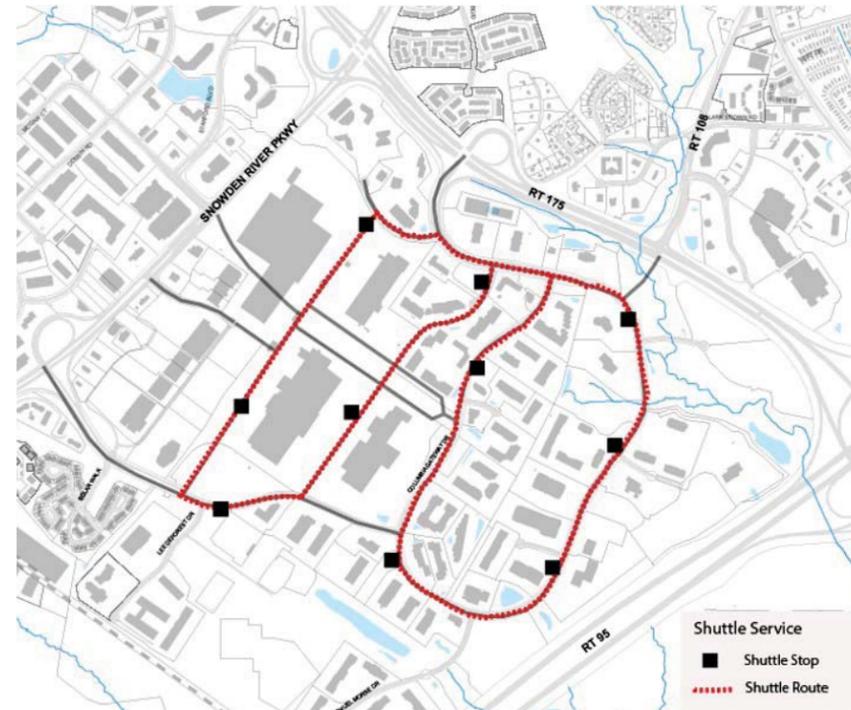


Figure 53: Medium Intensity Plan, Shuttle Service Plan.; Source: Author's diagram on base layers from County GIS

Parking:

With the extent of development in the Columbia Gateway, there will be a considerable increase in demand for parking. With the vision of creating a more walkable and bikeable area, the Plan proposal includes bike share and shuttle service to reduce the use of cars and congestion in the study area, reducing the demand for parking.

For parking spaces the Plan takes into account geographic, demographic and economic factors that affect parking demand. It aims to create sufficient parking, in order to reduce its impact on the built environment. It focuses on major development areas to create parking spaces and have higher density parking closer to major transportation hubs. It proposes leveraging currently underutilized areas (corners, edges, undeveloped land, etc.) for parking small cars, motorcycles and bicycles. It recommends maximizing the number of on-street parking spaces, for example, by using a curb lane for parking rather than traffic during off-peak periods, and designating undersized spaces for small cars or motorcycles.

III B. Medium-Intensity Plan: Transportation

This plan also suggests reducing the parking space size. Shorter-term parking requires larger spaces, but employee and residential parking spaces can be somewhat smaller. A portion of spaces can be sized for compact vehicles, which require about 20% less space than full-size stalls.

The plan proposes 5 parking zones. These zones do not represent a fixed space and can be expanded or reduced depending on the parking demand. The proposed zones are within walking distance to the proposed shuttle stops, providing easy access to the shuttle service. These zones are shared between different land uses to maximize the utilization of the space. More structured parking is proposed in place of surface lot parking. Parking meters can be used near commercial and retail areas to reduce parking demand and have a two hour parking limit to have efficient utilization of space.

Parking space: 10 ft wide, 20 ft deep, 25 ft aisle; Parking space = 200 sq. ft. + circulation space % = 269 spaces

Parking Calculations				
Use	Required Spaces (per Howard County Zoning Regulations)	Total Amount (Units or Sq Ft)	Parking Spaces required (Total Amount * Required Spaces)	Parking Spaces (Sq.Ft)
Residential (Townhomes)	2.5 parking space per unit	191		128,119.32
	1.5 parking space per unit	3564	5345.352	1,299,289.37
Office	3.3 spaces per 1,000 sf	658,515.33	2173.1006	584,564.06
Retail	5.0 spaces per 1,000 sf	187743.6	938.718	252,515.14
		Total Spaces	7994.7326	
		Total SF	2011972.749	
		Total Acres	46.18853878	

Table 17: Medium Intensity Plan, Parking Requirements; Source: Author's Information

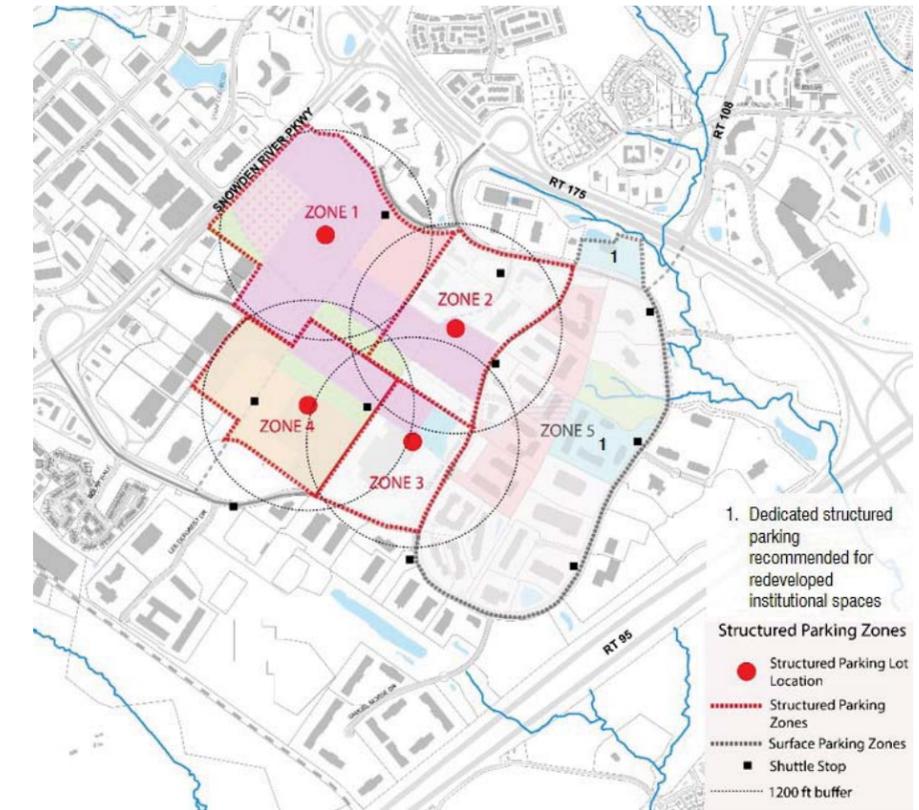


Figure 54: Medium Intensity Plan, Structured Parking Zones.; Source: Author's diagram on base layers from County GIS

III C. High Intensity Plan: Columbia's "Gateway" to Innovation

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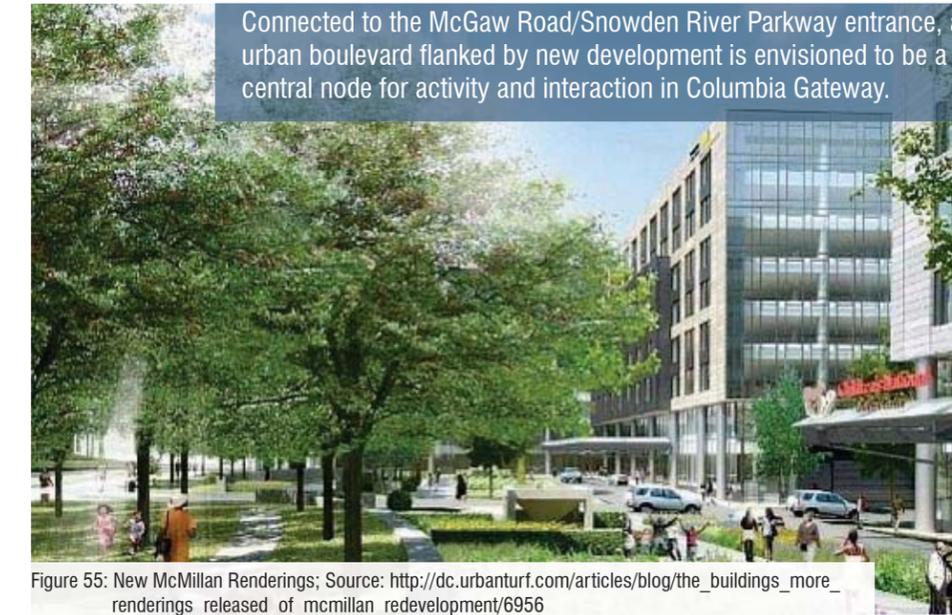


Figure 56: Coworking, Centre for Social Innovation; Source: <http://www.digital.nyc/incubators/center-social-innovation>

New development and redevelopment of aging office space within Columbia Gateway offers the opportunity to create shared spaces to bolster the innovative process in the creation, production, and distribution of goods and services.

Key Elements

- The removal of all existing GE buildings to create dense urban blocks with a network of streets that encourage walkability and establish a pedestrian-oriented environment;
- Introduction of major residential development with a variety of proposed housing options;
- Proposed infill and redevelopment of existing office areas within and to the east of Columbia Gateway Drive to form a new Innovation District. Focus on creating walkable blocks and pedestrian areas to create a sense of place and interaction;
- The development of a robust road network and new transportation plan to deal with higher density land uses and a more active site;
- Create and define open and civic places including community gardens, plazas, and third spaces, where people are part of an innovative network where they can socialize and interact;
- Increasing access to the site with new major access roads to Snowden River Parkway, a new connection to MD 108, and two new BRT Stations supporting enhanced transportation modes;
- The phasing of development so that the initial to mid stages are focused on major mixed-use development of residential and office zones at the center of the site with peripheral areas developing at later periods;
- A new major 'Boulevard' acts as a central spine to bridge/weave/connect various zones within the Gateway site.

Vision

This plan envisions that through the transformation of the physical site and a major collaboration effort between Howard County, property owners, firms, and other stakeholders, Columbia Gateway can become a nucleus for an innovation community.

III C. High-Intensity Plan: Opportunities and Constraints

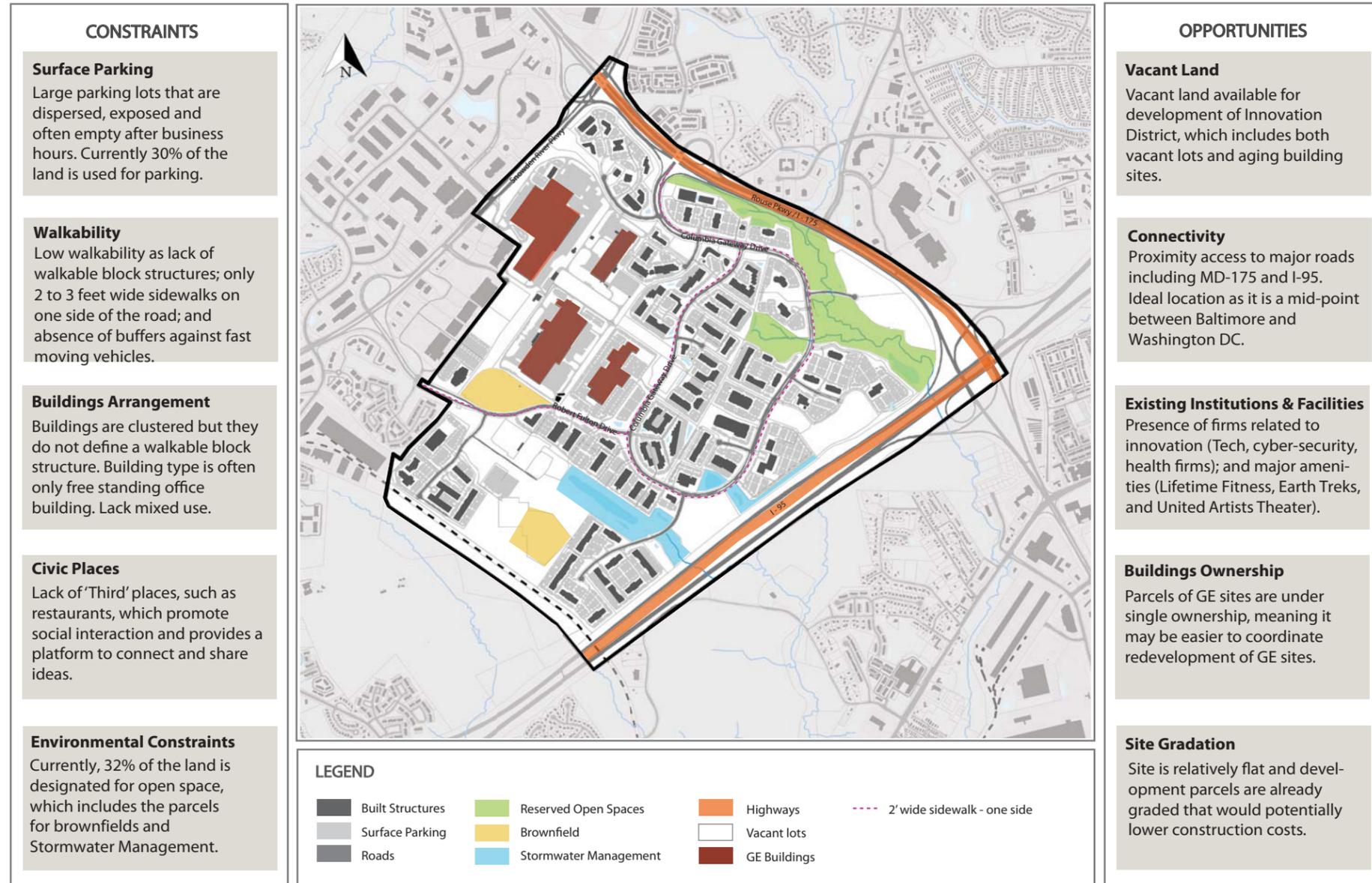


Figure 57: Gateway Opportunities and Constraints; Source: Author's diagram on base layers from County GIS

III C. High-Intensity Plan: Opportunities and Constraints



Figure 58: Earth Treks, Gateway Columbia; Source: <http://www.splicetoday.com/writing/i-love-earth-treks-climbing-gym>

Constraints

- The unknown environmental conditions in razing GE buildings. Is the land contaminated?
- Absence of sidewalks and lack of connectivity; not walkable;
- No civic, "third" spaces for casual interactions;
- No residential use, thus little retail. Both of such activities could "activate" the site better than current conditions;
- Design is that of a large suburban business park, dominated by parking, with secluded office spaces. These aspects make walking challenging and pedestrian activity limited;
- No major anchor institution, an important feature of an innovation district;
- Severely lacking transportation options. Dominated by private car use. Limited public transportation access due to lack of density;
- Few entry/exit points to the site;
- Stormwater management/steep slopes along Snowden River Parkway;
- Few amenities within the site (parks, coffee shops, restaurants, retail);
- No connection of pedestrian paths. Lack of pedestrian paths in certain areas;
- Growing pressure on industrial land to be rezoned for more profitable residential use;
- An aging building stock in office and GE buildings, less energy efficient, less attractive for future use;
- A major brownfield site near the cinema amenity;
- Proposal may compete with Downtown Columbia.

Earth Treks is a major existing amenity which serves as an opportunity for this plan to continue to draw people into Columbia Gateway, and be a major attraction especially for millennials connected to the tech firms of innovation assumed to flourish in Columbia Gateway.

Opportunities

- Presence of firms related to innovation (technology, cybersecurity, and health firms);
- Proximity access to major roads (MD 175/ I-95);
- Several major amenities (Lifetime fitness, UA Theater, Earth Treks);
- Building approaching end of life cycle. Increased opportunity for redevelopment moving forward;
- New development of large buildings within last 10 years. Office space still attractive to firms;
- Vacant parcels available for development and aging building sites attractive for redevelopment;
- Major parcels like the GE site are under single ownership and covenants on land use nearing completion;
- The site, being a part of Columbia, is midway between Baltimore and Washington D.C.;
- No major dissent from surrounding community on Columbia Gateway being further developed;
- Perceived as a fairly isolated and secluded office area; Opportunity to market; Columbia Gateway as a major development area with its own identity as an innovation district;
- Developed parcels already graded. Potentially lower construction costs.

III C. High-Intensity Plan: Land Use

In proposing wide range changes to the site, the high intensity plan proposes nine major land uses. The following pages give a description of the various uses and images of how such uses can be envisioned for their defined areas within Columbia Gateway. In the interest of changing the character and creating a vibrant, innovation-rich environment, this plan recommends strategies which ultimately can be used in a form-based code or implemented into zoning regulations.

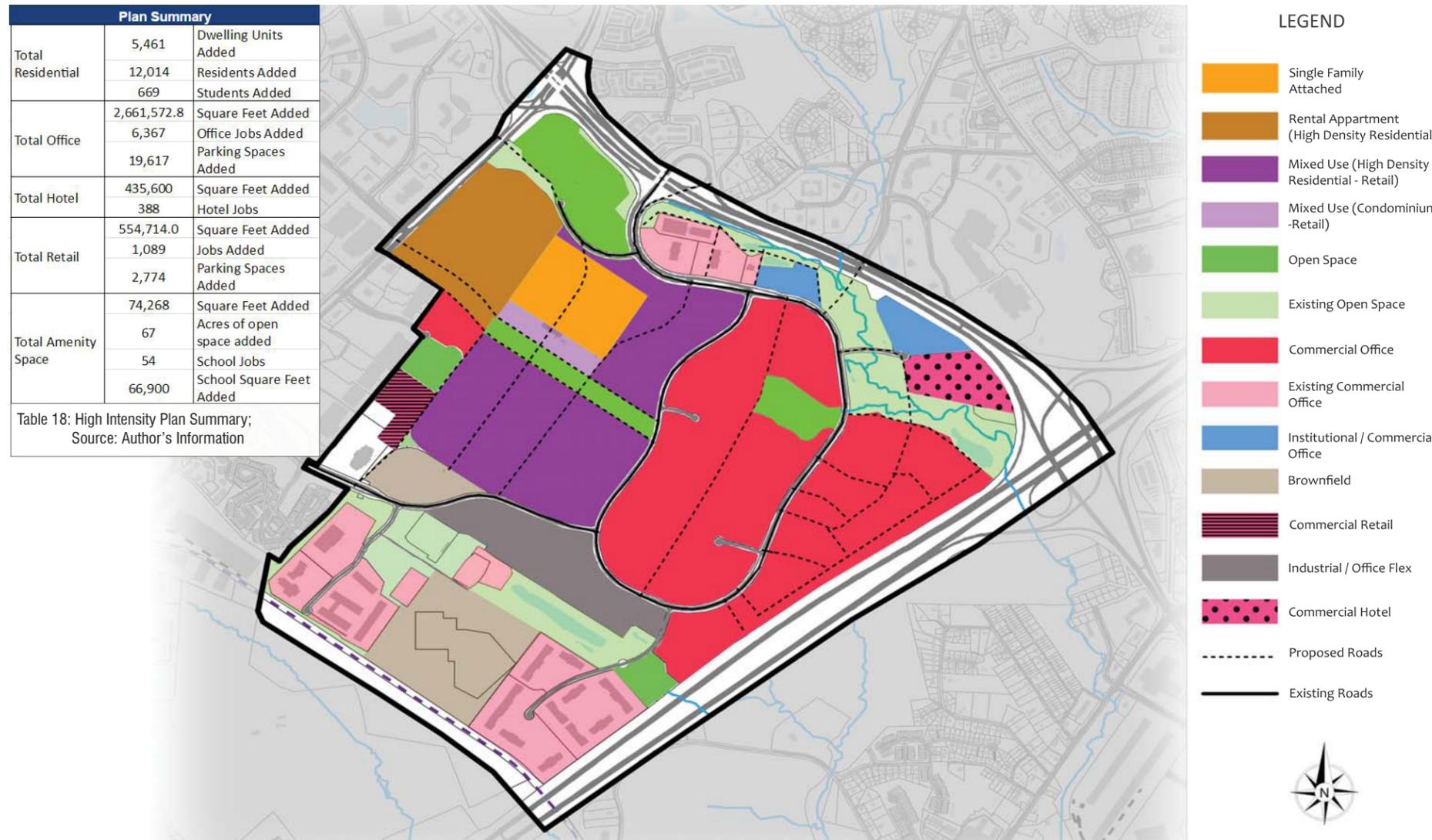


Figure 59: High Intensity, Land Use Plan; Source: Author's diagram on base layers from County GIS

III C. High-Intensity Plan: Plan Information

Use	Area (Acres)	Developable Area (Acres)	95% Housing (5% Retail) Acres	Residential Density (DU/Acres)	Residential (No. of Units)	Retail (square feet)	Average Household size	# new residents
Medium Density Townhomes	10.6	8.48		15	127.2		2.2	279.84
Medium Density Stacked Townhomes	11.8	9.44		15	141.6		2.2	311.52
High Density Residential Multifamily	38.9	31.12		40	1244.8		2.2	2738.56
Mixed-Use High Density Residential Multifamily w Retail	33.3	26.64	25.308	45	1138.86	29010.96	2.2	2505.492
High-Density Condos W Retail	2.61	2.088	1.9836	40	79.42	2276.01	2.2	174.724
High-Density Condos W Retail	2.61	2.088	1.9836	40	79.42	2276.01	2.2	174.724
Mixed-Use High Density Residential W Retail	77.1	61.68	58.596	45	2649.645	134339.04	2.2	5829.219
Total	176.92	141.54			5461	167902.02		12014.079

Table 19: High Intensity Plan, Proposed New Residential Development; Source: Author's Information

Students Generated	
Grade Level	Number of Students
Elementary School	331
Middle School	147
High School	191
Total	669

Table 20: High Intensity Plan, Impact on Schools; Source: Author's Information

III C. High-Intensity Plan: Plan Information

Notes:

- *Developable area is the total # of acres multiplied by the average amount of developable area for a given site (80%), as recommended by the Howard County Land Development Department in Sabra Wang's Traffic Assessment.*
- *The number of units per acre was determined based on the following range of densities:*
- *Low-density residential: 1-8 DU/acre*
- *Medium-density residential: 9-25 DU/acre*
- *High-density residential: 26-40+ DU/acre*
- *For single-use residential, 100% of the developable area is assumed to be dedicated to residential use. For the mixed-use parcel, 95% is dedicated to residential use, while the remaining 5% is dedicated to retail.*
- *The total number of units is the developable area multiplied by the DU/acre and the % residential.*
- *The average household size was derived from average household sizes of surrounding census tracts, and chosen to best represent the expected type of household the redevelopment will attract. It is expected that Gateway will appeal primarily to young professionals, an assumption shared by the Downtown Columbia redevelopment. This would translate to a smaller average household size than the county overall.*
- *The number of new residents is the number of units multiplied by the given average household size.*
- *The number of students added is the total number of new housing units multiplied by the expected student yield per housing unit (0.118). The expected student yield was calculated as the expected student yield per new housing unit in downtown Columbia, according to the Howard County Department of Planning and Zoning. Downtown Columbia is considered a comparable redevelopment project to Gateway.*
- *The number of jobs created for commercial office is the square footage of developable area divided by 405 for commercial office, 509 for retail, 134 for the commercial retail hub, 466 for light industrial, 1124 for hotel, or 466 for the innovation district. These figures represent the number of square feet required to generate 1 new office employee, according to the Planner's Estimating Guide (Arthur C. Clark, FAICP, 1999).*

III C. High-Intensity Plan: Medium-Density Residential (15 units/acre, 22 acres)



Conventional townhomes envisioned for the medium density residential area.

Figure 60: The Crossings at Highland Park, Middlesex County, NJ; Source: <http://www.maserconsulting.com/projects/the-crossings-at-highland-park/>

While a major concept of the high intensity plan is to increase density throughout the site to create a more urban sense of place, the plan would also introduce a wide range of housing options. Coupled with retail, housing can particularly invigorate the site in the evening hours after Columbia Gateway employee activity terminates, assuming most employees are commuting to the site. Thus, introducing housing would be one component in making the site a more vibrant place.

The mid-density residential land use parcels would be located in between the new proposed boulevard and Alexander Bell Drive. This site is proposed to have single-family attached townhomes. As an existing and prevalent housing form within Howard County, it is the assumption that townhomes within the site would help address greater demand for housing within the county and give an attractive option for families who not only want to live in Columbia and Howard County, but who also want to be a part of the Columbia Gateway urban, innovation experience.

The parcel areas dedicated for townhomes envisions different types between conventional townhomes oriented in rows and stacked townhomes. The presence of these townhomes reflects several housing objectives of the high intensity plan. One is to provide a variety of housing types. Second is addressing the pressure of demand for more residential land usage. Finally, the plan would want to implement the Moderate Income Housing Unit (MIHU) policy adopted by the county (10-15% of residential units be affordable according to MIHU standards).

III C. High-Intensity Plan: High-Density Residential (40 units/acre) (38 acres)



Figure 61: Highgate at Metropolitan Mile, McLean, VA; Source:<https://www.psbusinessparks.com/about/development/>

Tysons Corner, Virginia: This type of midrise apartment building would be envisioned for Columbia Gateway. While not planned to support ground floor retail at this time, this design shows how there can be an engaged public realm with outdoor furniture and space to interact.

The high density residential land use is envisioned to encompass four to five story apartment buildings. This area would be immediately to the west of the townhomes and would be adjacent to Snowden River Parkway and thus a highly visible area with connection to the new boulevard main street connecting to McGaw Road. This land use would allow the opportunity to significantly increase the number of residents in Columbia Gateway and create the mass of people to begin transforming the area into a vibrant, activity charged place. High-density residential land use would ideally be midrise apartments with building facades lining the streets. These buildings would also be within the new grid of streets proposed in this plan, and thus form blocks of residential apartment buildings.

Two parcels adjacent to the new urban boulevard and the mid-density residential areas are recommended to be similarly scaled condo buildings. This would create another housing option. This urban boulevard would be a key feature of this area and of the overall plan. This boulevard is envisioned to be a vibrant activity street that is highly walkable and promotes an inviting feeling for pedestrians with ample street furniture (benches, lighting, landscaping, etc.).

III C. High-Intensity Plan: Commercial Retail Hub (11 acres)



Figure 62: The Waterfront Redondo Beach; Source:<http://thewaterfrontredondo.com/the-plan.php>

The introduction of this retail hub becomes a source of constant activity within Columbia Gateway outside the 9-to-5 work schedule. In addition, this retail hub, as figure 62 shows, can be a source of a nightlife where people can enjoy entertainment, dine, and shop.

In an effort to spur activity in the site and support the new residential components, this plan proposes a new residential retail hub situated adjacent to the residential mixed-use zone in the western part of the site. This retail hub would also be adjacent to the existing United Artists movie theater. The plan attempts to connect this retail component to the movie theater in an effort to create a new node within Columbia Gateway that is full of activity. This notion of creating nodes is significant because it can be used as tool to connect people and places, especially in such a large site.

This area is envisioned to have local retail amenities such as coffee shops, dry cleaners, bars, a grocery store, several variety department stores, and restaurants. These amenities would create activity and business in the site at all hours of the day and thus add more character to a site which is currently a greenfield at the rear of the Snowden Square shopping center. The fact that this area would be adjacent to the Snowden Square shopping center (excluded for the Columbia Gateway study area) would create opportunities in the future to connect this retail with Snowden Square.

This opportunity is based on the assumption that Snowden Square would be redeveloped and continue as a retail center during the 25-30 year life cycle of this plan, extending the successful retail concept into the Gateway study area.

III C. High-Intensity Plan: Mixed-Use Residential (33 acres)



Figure 63: Westside at Shady Grove Metro, KTG Architecture + Planning; Source: <http://ktgy.com/work/westside-at-shady-grove-metro/>

Mixed-Use Residential: (33 acres)

The mixed-use residential area would be immediately to the south, adjacent to the new urban boulevard/McGaw Road connection. This area would also be arranged in blocks on top of the new proposed street grid and sit directly east of the planned retail hub. This area would continue the urban design and parking system highlighted in the high-density residential area with buildings lining the streets and heights of 4-5 stories. A key distinction would be that these buildings would be apartments with retail on the ground floor. As explained previously, current market conditions limit the amount of retail in this site. Ideally, this plan would call for retail components consistently along the ground floor of all apartment buildings in this area to create a vibrant pedestrian street life. However, recognizing current demand of retail, and more importantly, trying to balance the effectiveness of the commercial retail hub area, this plan recommends that retail be strategically oriented at the ground level, at the corners of these buildings, to create activity on the street at these node areas.

Westside at Shady Grove, Rockville, Maryland: This new mixed-use development reflects a similar environment envisioned for the mixed-use residential area within Columbia Gateway. This particular rendering reflects how ground floor retail, particularly at the corners of blocks, and spacious sidewalks can give a platform for an active streetlife.

III C. High-Intensity Plan: Mixed-Use (Light Industrial/Office/Flex)



Figure 64: Aerodrome Road, Light Industrial Units; Source: <http://www.spencelttd.co.uk/case-study/aerodrome-road--light-industrial-units-174967749.html>



Figure 65: The Apex Group, a shipping facility; Source: <http://www.apexshipping.com/>

Mixed-Use (Light Industrial/Office/Flex)

The light industrial zone comprises the area which is currently office/flex space. This plan would recommend continued use of this office/flex space in addition to small industrial manufacturing uses. Together, this area would serve as a supply-oriented area for the ideas and products that are produced from the firms and startups in the innovation district zone. This plan envisions the great opportunity that Columbia Gateway could have to not only produce innovative ideas and concepts for the marketplace, but could also produce, at a small scale, the material assets of those ideas.

Figure 64 shows how the light industrial mixed use zone can serve as the support area for the larger firms envisioned in the innovation district. Small industrial manufacturing (above left) could be the facilities that produce products from entrepreneurs and startups in the innovation district. Furthermore, flex office space can be redeveloped into more of a 'campus feel' to help aid in bringing firms together in collective spaces to spur idea generation. The flex space could then continue the creative process from idea to product.

Figure 65 illustrates how this industrial office/flex offers the opportunity to create a unique cluster of small manufactures, lab space and R&D where firms can translate their ideas generated in the innovation district (ECHO) to physical products. Combining idea generation and product production, Columbia Gateway could become a distinct area of innovation throughout the region with its own distinct character.

III C. High-Intensity Plan: Institutional/Office, Hotel and Open Space



Figure 66: College/Library, Metro Centre at Owings Mills; Source:<http://metrocentreom.com/college-library/>

Figure 66 is from Metro Centre, Owings Mills, Maryland- This mixed use development brings together government, education, office, and retail space structured around an open plaza layout.

A similar type of development would be proposed within the proposed institutional area in this high-intensity plan. Such development could bring existing and new uses together such as the Howard County office building, private firms such as COPT, and select retail such as the popular AIDA restaurant.

Mixed Use (Institutional/Office) (47.3 acres)

With the major addition of residential land use and the other various land use changes to increase density within the site, this plan recognizes the importance and opportunity that an institutional use would bring to the site. In this area, there could be a school and expansion of the high-quality public library system with a new location here within this zone.

Hotel (26 acres)

Hotel space would be important within the scope of this plan in order to accommodate people who are visiting firms and businesses, as well as Columbia. This area would be planned near I-95 to provide visibility from the interstate and help successfully draw people to the site.

Open Space (207 acres)

The last major land use category is open space. In significantly developing most parcels within Columbia Gateway, it is important that this plan preserve existing open space in certain areas. This is no more clear than in the northeast area of the site. The Dorsey Run stream bed is a major natural resource on the site and the wooded area that encompasses it should be protected from development. Furthermore, in the northwest corner of the site where Snowden River Parkway meets MD 175, this area is planned as a major open space park and community amenity space. In addition, this open space parcel could also be envisioned as a mixed use park site for a major recreational space such as a Baltimore Ravens training facility. Finally, the site could also be used for community facilities such as a police department and fire station. This area would be strategically beneficial for these services because of its access to the Columbia Gateway Drive entry/exit point. Furthermore, green open space would be encompassed in the new urban boulevard designed to feel like an urban park (For example, Meridian Hill Park in Washington DC). Such an urban open space would further help to spur pedestrian activity along this boulevard along with the retail along the mixed-use residential zone buildings. Finally, at the street level, open space would be embraced with wider sidewalks and tree plantings along streets and in plazas.

III C. High-Intensity Plan: Office (Innovation District & Southern Areas 377 acres)



Figure 67: CO+HOOTS, downtown Phoenix's; Source:<http://aztechbeat.com/2015/11/cohoots-announces-spring-2016-expansion-plans/>

The continued development of office space within Columbia Gateway Drive is envisioned to be the heart of the new ECHO innovation district where startups, business incubator accelerators and larger firms can cluster to foster idea-sharing.

Office: (Innovation District (ECHO) & Southern Areas 377 acres)

Office space is currently a dominant land use category in Columbia Gateway, and would remain so in this plan. One of Columbia Gateway's major strengths is its extensive business community. There are major national firms such as Leidos and Kaiser Permanente. Office land use would be predominant in the Innovation District zone encompassing parcels within the Columbia Gateway Drive ring and the large parcels to the east of Columbia Gateway Drive and west of I-95. The overall strategy in these areas would be to bring buildings closer to the street and to each other. This would be most strongly seen in the internal Columbia Gateway Drive buildings of which many are 20 to 30 years old and would be in good position for redevelopment during this plan.

III C. High-Intensity Plan: Office (Innovation District & Southern Areas 377 acres)

This plan proposes a reorienting and addition of buildings and a subsequent increase in building height of two to three stories. This would increase overall office space by increasing density on existing sites, offering a future pipeline of Class A office space. Secondly, the taller stories would allow for orientation where offices could be on the top floors and the ground floor could be inviting lobby space and or leasable startup spaces for entrepreneurs and tech-firms. Interior building open lots for parking would follow the scenarios described in the high-density residential area. These efforts thus focus on creating a stronger pedestrian street sense along Columbia Gateway Drive and the new internal streets proposed inside the Columbia Gateway Drive, where people can walk to different places and engage in a new, more developed public street realm.

This area would also be a prime location for business incubators and accelerators. With this redevelopment scheme, major firms could cluster with business incubators, take advantage of this close proximity, and help to spur business relationships that will have mutual economic benefits for involved parties. The existing buildings would be embedded seamlessly within the newly created fabric of additional buildings. These buildings are reoriented to face the streets in a way that masks the parking, in order to promote walkable gathering spaces and generate a public realm.

To offset the intense development within the innovation district zone, two large existing squares to the southeast corner adjacent to I-95 and the office buildings near Lifetime Fitness will be planned as continued office space. This allows for the retention of traditional, Class A office privatized space, in their current form. This could be attractive to firms that might not find the sharing space concept within the innovation district necessarily essential for their business (such as defense and security firms), but retain the view of Columbia Gateway as an attractive location for their firms.



Figure 68: Oberlin's LEED Downtown Development Revitalizes a Community, Inhabitat; Source: <http://inhabitat.com/oberlins-leed-gold-downtown-renovation-revitalizes-a-community/>



Figure 69: North Shore Place I & II Project, Limbach; Source: <http://limbachinc.com/8811/north-shore-place-i-and-ii-project>

III C. High-Intensity Plan: Design Considerations

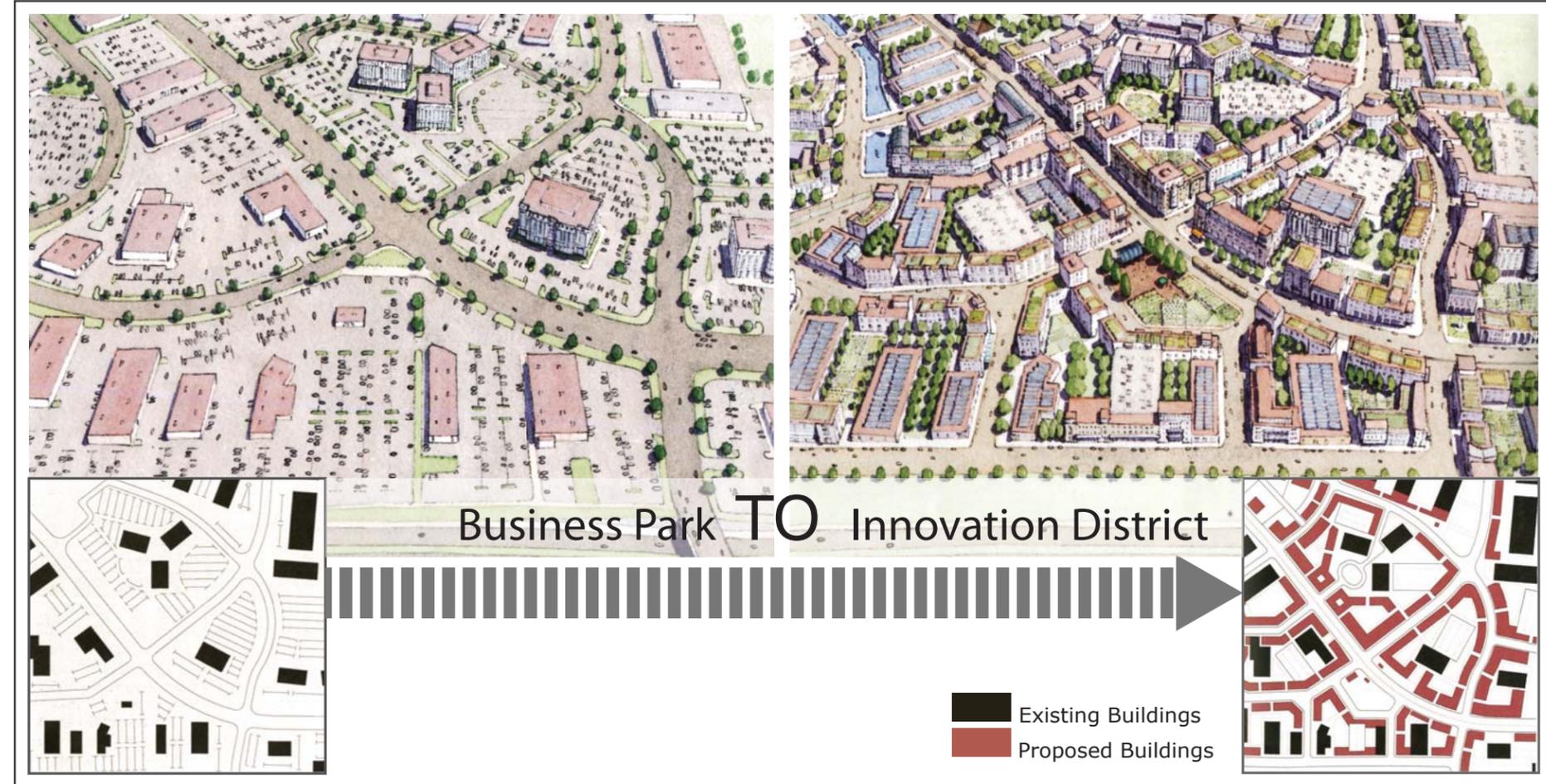


Figure 70: Infill Development; Source: Tachieva & Bell, 2010, Pg 166

Columbia Gateway is a suburban business park that contains clusters of freestanding buildings that are dedicated specifically for office and industrial uses. The arrangement of the buildings tends to be arbitrary as they stand within over-scaled parking lots that are often underutilized and dominate building frontages. Such an arrangement of buildings and lack of identifiable block structure, reduces connectivity and walkability. Lack of walkable destinations and civic places force office workers to operate all day in their fortresses and drive to other places for lunch and errands. The site has potential for infill development in which existing buildings are embedded seamlessly within the newly created fabric. Balancing infill with mixed uses and increasing density will help to transform a business park into an innovation district. Making streets walkable and providing open and enclosed civic/third places will allow people to interact, connect and share ideas that fulfill the purpose of an innovation district. The high density urbanism will support retail and Bus Rapid Transit by providing more housing, jobs and commerce.

III C. High-Intensity Plan: Design Considerations

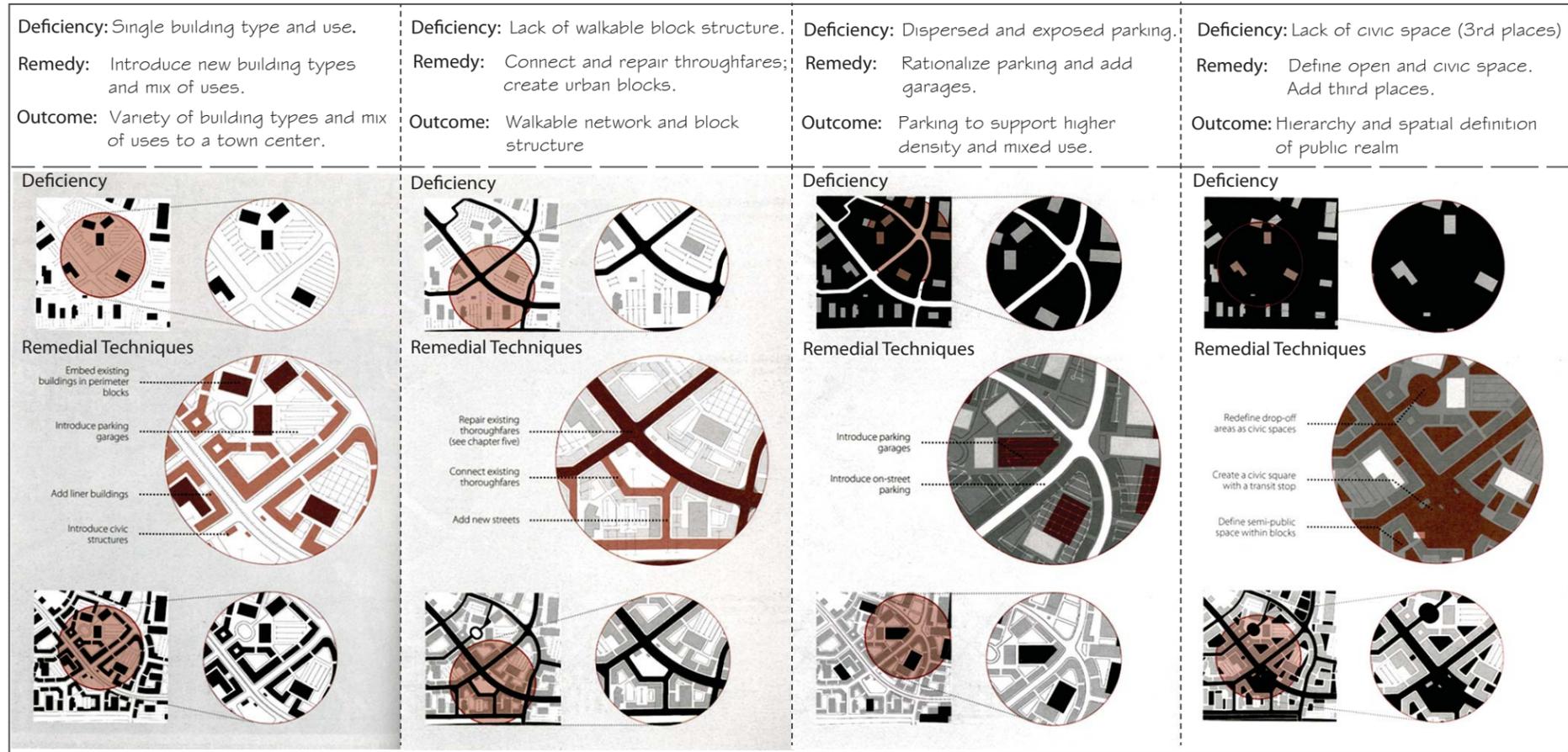


Figure 71: Design Strategies; Source: Tachieva & Bell, 2010, Pg 168-171

Although buildings are clustered, they do not form defined blocks or create a street-scape which is pedestrian friendly. The remedy is a rebalancing of uses. Housing, shopping, and lodging are inserted to create a place which is occupied 24 hours a day. Oversized parking lots can easily accommodate parking garages with new residential and retail buildings at their perimeters. Offices can share some parking with housing. Creating a denser network of streets will calm the traffic and encourage pedestrian circulation. Additional repairs may include reduction of lane widths by adding parallel parking and sidewalks, reducing curb radii for easier pedestrian crossings, and adding median and access lanes. The new block structure allows for hierarchical allocation of civic spaces. A square at the Boulevard that accommodates a future transit stop, becomes a focal point by forming a small plaza. Other similar open courtyard spaces serve as plazas with outdoor cafés, which become gathering places.

III C. High-Intensity Plan: Zones & Nodes



Figure 72: High Intensity, Zones and Nodes; Source: Author's diagram

III C. High-Intensity Plan: Implementation and Phasing of Development

Preliminary-Planning Phase (2017-2025):

Acting as a preliminary-development phase, this period is intended to be an intensive planning process between Howard County government, crucial stakeholders, and firms within Columbia Gateway, particularly those involved in technology, health, and cybersecurity, to come up with a consensus on the plan for Columbia Gateway as an innovation district. Such activities could include focus groups to identify if and how these firms could engage in collaboration. The evolution of such relationship building could progress in the form of monthly happy hour socials, the formation of a Columbia Gateway social network account, and ultimately some major synergetic planning efforts, such as a signage package for the new identity of the Columbia Gateway Innovation District. Such exercises could help build enthusiasm among firms and momentum behind the idea of the innovation district. Preparing the people and the site for innovation would include not just the building of relationships or the development of land, but also building the technological infrastructure to make sure that the site is completely “wired” and wifi-accessible throughout, so that companies can continue to evolve and communicate effectively.

Phase 1: (1st 10 years of the plan)

The first official phase of the plan would focus on the development of the residential areas proposed within Columbia Gateway. Most importantly, an environmental site analysis would be warranted at this point to determine if the GE site is free of contamination and physically suitable for the kind of high density residential development proposed in this plan. This analysis would be crucial in determining how and if this plan could proceed. Given a favorable outcome from such an analysis, the initial development stages would call for the demolishing of all of the GE buildings to set the stage for the new residential area. If accomplished, the new proposed street grid construction would then proceed in order to form the residential blocks.

Phase 2: The Innovation District (2nd 10 years of the plan)

This phase would deal with tackling the interior parcels within the innovation district in the central part of the site. Like in the previous phase, importance would be placed on creating the new street grid network. By this time period, many of the buildings would be 30-40 years old and would be ready to either be replaced or redeveloped. New buildings will begin to take shape in accordance with the urban design proposed for this area, as previously discussed. These urban design strategies would include bringing buildings closer to Columbia Gateway Drive and constructing parking behind such structures, in the form of lots or constructed garages. In addition to development of the interior parcels, parcels on the far east side of the site may start to be redeveloped during this phase.

Phase 3: (The Last 5 years)

The final phase would deal with development of the large peripheral parcels. These include the large open space in the northwest corner of the site, the civic institution areas, formal development of the anchor institution and hotel area, the light industrial area, and the two remaining office square parcels adjacent to Lifetime Fitness and I-95 in the southeast corner of the site. Since the residential, retail, and office components are central to the innovation district, these peripheral office areas have been planned to develop at later times in order to respond and adjust to the market and the conditions of the innovation district area and mixed-use residential areas.

III C. High-Intensity Plan: Transportation

This plan will require dramatic expansion to the transportation infrastructure of Columbia Gateway. The addition of many residential units and an increase in retail and mixed uses will induce a significant increase in automobiles and pedestrians moving throughout the area. Not only will the current system need to be upgraded to support this demand; it will also need to be expanded. The result envisioned is a balanced, multi-modal system that de-emphasizes automobile travel as much as possible. This system includes existing streets along with many new local, collector, and arterial streets, new mass transit facilities, new on-road and off-road bicycle facilities, and improved pedestrian facilities throughout.

The goals of this transportation plan are:

1. Increase access to Columbia Gateway by adding additional entry/exit points
2. Provide a walkable and bikeable environment
3. Mitigate congestion by implementing an urban style street grid
4. Provide sufficient parking while limiting parked cars impacts on the built environment
5. Strong Transportation Demand Management to limit travel by single occupancy vehicle



Figure 73: High Intensity, Street Network; Source: Author’s diagram

This street grid and hierarchy does not provide final prescriptive street design. Final street design will require extensive modeling and traffic study, which shall be undertaken in Phase One. This section is intentionally flexible to maintain a clear hierarchy of streets while allowing for various designs based on forecasted need. As such, the transit system is designed to meet transportation needs in each Phase of the plan. Figure 73 shows the major connections, including the Boulevard which is the centerpiece of the Phase One development. It also shows the urban style street grid of blocks that measure roughly 300 by 500 feet. This style of street grid is widely understood to disperse congestion by offering more route choices and shorter, more direct trips. Not only will vehicle travel become more efficient, an urban street grid provides an accessible, human scaled environment that will be safe to use, intuitive to navigate, and aesthetically pleasing to users- which supports many of the overall goals of this plan. This street grid is supported by arterial roads which provide north/south and east/west connections, as well as disperse traffic from the external site connections. This will ensure quick trips with minimal congestion. Funding for transit improvements to Columbia Gateway will be the responsibility of developers, public-private partnerships, and Howard County.

III C. High-Intensity Plan: Transportation

Key to the transportation plan is increased site access. This plan calls for three new connections from the exterior road network to Columbia Gateway. The most major is connecting MD 108 to the site from the north. Our plan calls for a signaled intersection at MD 108 and MD 175, with a major arterial road entering the site before splitting into two intermediate to minor arterial roads, integrating traffic into the street grid. The second most major new connection shall be the extension of McGaw Avenue across Snowden Parkway into the site where it will split into a one-way boulevard that surrounds the central green space before meeting Columbia Gateway Road. Finally, an arterial road will connect with Snowden north of McGaw, providing access to the site between McGaw and the Snowden/MD 175 intersection. By doubling the number of points to access Columbia Gateway, a major increase in level of service is expected.

Figure 74 depicts Portland grid, with Pioneer Square in the center. (image from Google Earth)



Figure 74: Portland grid, with Pioneer Square in the center; Source: Google Maps

Minor Collectors:

The Minor Collectors will make up the bulk of the street grid in the residential areas of Columbia Gateway. These are relatively narrow streets with one lane of traffic in each direction. These streets are intended for low speeds, ideally 25 MPH. They will feature on street parking, not only to provide parking for residents but also to provide a physical buffer from car traffic for pedestrians. Other Complete Streets best practices will be followed, including mixing bike and car traffic with shared lane markings.



Figure 75: High Intensity Plan, Minor Collector Street; Source: Section generated from streetmix.net/

III C. High-Intensity Plan: Transportation

Major Collector:

These streets will make up the bulk of the streets in the commercially focused areas of Columbia Gateway, as well as portions of the residential area that require additional road capacity as determined in Phase One. These streets are wider, have one lane of traffic in each direction at slightly higher speeds, and provide a protected bike lane further buffered by parked cars. These measures should maintain a pleasant and safe environment for pedestrians and cyclists, a well defined street edge for aesthetic reasons, while also increasing automobile access to the site.



Figure 76: High Intensity Plan, Major Collector Street; Source: Section generated from streetmix.net/

The Boulevard:

A street that rings the green spaces at the center of Columbia Gateway is one of the central features of the plan, and thus has a unique design. The boulevard will be one way, with parking on the opposite side of the green space. There will be a protected bike lane on that side as well. The goal is to provide a unique feel around the central green space that is aesthetically pleasing while allowing robust traffic flow through the center of the site.

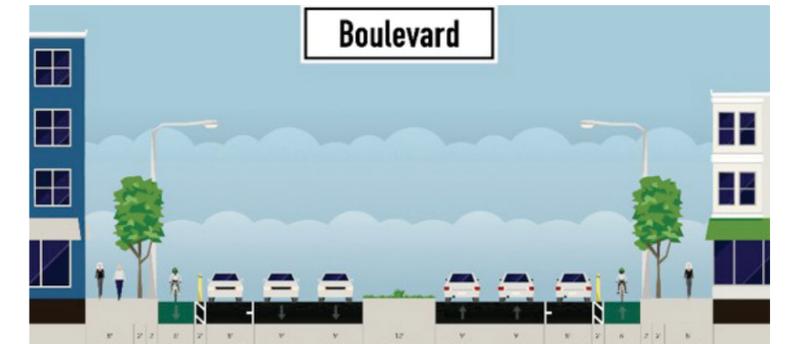


Figure 77: High Intensity Plan, Boulevard; Source: Section generated from streetmix.net/

Minor Arterial:

These streets will be used throughout Columbia Gateway to provide enhanced access to automobiles where is deemed necessary based on traffic studies conducted in Phase One. These streets will have two lanes of traffic, but maintain the on-street parking and protected bike lanes that enhance the pedestrian and cyclist experience throughout the site.

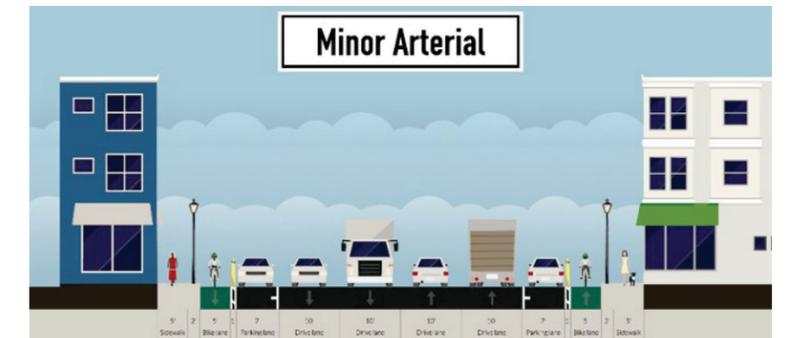


Figure 78: High Intensity Plan, Minor Arterial; Source: Section generated from streetmix.net/

III C. High-Intensity Plan: Transportation

Major Arterial:

There is only one Major Arterial street intended for Columbia Gateway, which is the connector to State Road 108 south of the proposed new intersection at 175. This road is designed to handle a large volume of traffic while at the same time introducing traffic calming measures like narrower lanes so that incoming traffic may be easily integrated to the rest of the street grid.

Transportation Demand Management:

Ultimately transportation for Columbia Gateway, not to mention the region as a whole, will only succeed if more individuals can be induced to take alternate means of transportation, reducing trips taken by single occupancy vehicle. To help promote more use of mass transit and active transportation Columbia Gateway requires cutting edge Transportation Demand Management (TDM). In Phase One a consulting firm specializing in TDM shall be part of the broad consultation and planning for Phases Two-Four. Their specific recommendations should be followed, and should generally emphasize the following points. One, employers should provide strong incentives to encourage employees to use mass transit rather than drive single occupancy vehicles. Two, to accommodate employees outside the mass transit network, car and vanpools should be established. Three, technologically cutting edge ridesharing should be encouraged financially. Fourth, bike commuting should be encouraged by employers offering secure bike parking and shower facilities in their buildings, which would also help attract younger talent. If these points do not limit congestion sufficiently Columbia Gateway should implement congestion pricing at peak hours, collected at the site entrances, to further mitigate congestion. The above points can be funded by in-lieu fees developers can pay to avoid having to build additional parking. This plan assumes a 20-25% reduction in parking demand as a result of this TDM plan.

Other elements of the transportation plan:

Bus Rapid Transit (BRT), as being explored by Howard County, will be the mass-transit option for Columbia Gateway. It is assumed that BRT will provide inexpensive, efficient mass transit for Howard County. This plan envisions one BRT station built in Phase 2 to service the new residential development, connecting those residents with points up and down the corridor. A second BRT station will be added in Phase 3 to service the new, incoming employees in the Innovation District. Providing incentives for residents and employees to take BRT is the cornerstone of the Transportation Demand Management plan for the site.

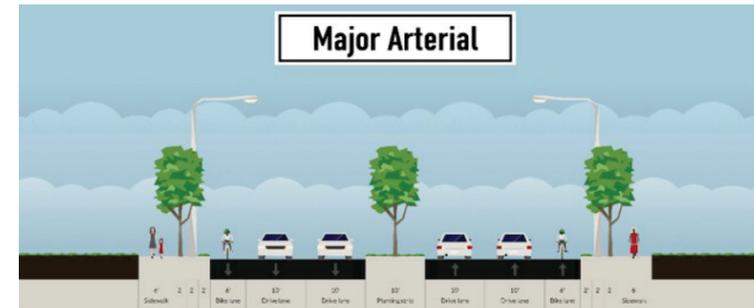


Figure 79: High Intensity Plan, Major Arterial; Source: Section generated from streetmix.net/



Figure 80: BRT, Santiago de Cali station; Source: https://commons.wikimedia.org/wiki/File:BRT,_santiago_de_Cali_station.jpg

III C. High-Intensity Plan: Transportation

Bike improvements listed in the Columbia Association Bike Plan should be encouraged outside of the study area to increase bike connectivity, especially parallel bike facilities along Snowden Parkway, Route 108, and the CSX rail line. Incentives for bike commuting are also a key component of the Transportation Demand Management Plan. Employers are encouraged, and perhaps incentivised with higher FARs to provide secure bike storage, locker rooms, and shower facilities in new buildings.

Aside from the bike trails, other bike facilities will be on-street shared lane markings on low volume roads or separated bike lanes on high volume roads. NACTO's complete street guidelines will inform the final designs. Traffic calming measures, like speed tables and narrow travel lanes, will be implemented in the minor collector and local streets to keep traffic at safe speeds and incentive travel on the major connector and arterial streets.

Figure 81 depicts an example of "Complete Street" concept.



Figure 81: 'Complete Streets' Redesign for Hoboken's Washington Street; Source: <http://subwaynynj.com/revealed-complete-streets-re-design-for-hobokens-washington-street/>

Aside from the bike trails, other bike facilities will be on street shared lane markings on low volume roads or separated bike lanes on high volume roads. These designs are shared as part of the above streetscape concepts. NACTO's complete street guidelines shall dictate the final designs. Traffic calming measures, like speed tables and narrow travel lanes, will be implemented in the minor collector and local streets to keep traffic at safe speeds and incentive travel on the major connector and arterial streets.

Parking

The extent of new development in Columbia Gateway will produce significant demand for expanded parking capacity. However, excess parking should be avoided in order to incentivize alternative transit methods. Parking should be shared as much as possible between different land uses to maximize utilization without conflict where possible. In other words, parking is best located where it can service users that visit Columbia Gateway at different times so that lots are not sitting empty for extended periods. Due to the amount of new parking required, this plan calls for high quality structured parking rather than surface lots. Surface lots likely will not be able to accommodate the volume of required parking spaces in the Howard County Municipal Code, and diminish the quality of the built environment. Structured parking should be designed to be as aesthetically pleasing as possible, or concealed from the street by other structures as much as possible. To mitigate congestion around parking structures they should offer multiple entrances and exits onto collector streets rather than arterial streets.

III C. High-Intensity Plan: Transportation

This Plan assumes that parking requirements will be reduced for Columbia Gateway due to the Transportation Demand Management steps listed above. The Howard County Municipal Code grants a 20% minimum parking requirement reduction based on a “Trip Reduction Plan” to be approved by the Maryland Department of the Environment. However, even with this reduction Howard County still requires a very large amount of parking- in our case close to 35,000 spaces. That would require 25 standard parking structures with a capacity of 1,500 spaces. Each of these costs roughly \$100,000,000.00. Obviously this is a huge expense. For that reason this Plan advocates an exception to the County Municipal code for the case of Columbia Gateway. The Code may very well make sense for suburban developments, but for the dense urban vision of the Plan with mass transit connections a different standard would be preferable. Table 22 displays the minimum parking requirements based on the Prince George’s Municipal Code. Using those requirements yields, 23,000 additional parking spaces are projected- a far more manageable amount. Therefore, this Plan calls for an adoption of similar requirements to Howard County’s neighbor, Prince George’s County.

To manage on street parking:

- Require parking in predominant residential areas to have permits in order to maintain open spaces for residents
- Install parking meters near commercial and retail areas in order to facilitate space turnover- ideally between 10 minutes and 2 hours
- Foster a “park once” approach by placing parking near strong pedestrian connections to limit trips taken by car within Columbia Gateway

Parking Requirements in the Howard County Code with 20% Trip Reduction Plan			
	Required Spaces (per Howard County Zoning Regulations)	Total Amount (Units or Square Feet)	Parking Spaces (Total Amount x Required spaces)
Residential (Townhomes)	2.5	269	673
Residential (Apartments)	2.3	5,192	11942
Office	2.64 spaces per 1000sf	7,430,465	19617
Retail	5 spaces per 1000sf	554,715	2774
		Total Spaces	34,333
		Total in Sf	6,008,275.00
		Total Acres	137.33

Table 21: High Intensity Plan, Parking Requirements (Ho.Co. Code); Source: Author’s Information

Parking Requirements in the Prince George’s County Code with 25% TDM reduction			
	Required Spaces (per PG/Mont County Requirements)	Total Amount (Units or Square Feet)	Parking Spaces (Total Amount x Required spaces)
Residential (Townhomes)	1.25	5,461	6826
Office	2.0 spaces per 1000sf	7,430,465	14861
Retail	2.0 spaces per 1000sf	554,715	1109
		Total	22,797
		Total in Sf	3,989,406.75
		Total Acres	91.19

Table 22: High Intensity Plan, Parking Requirements (Prince George’s Co. Code); Source: Author’s Information

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Conclusion

Through analysis of current conditions and geographical context, it was determined by this studio that the Columbia Gateway site is a highly suitable location for Columbia's next major redevelopment project. Given the rising trend of Innovation Districts in cities across the country, Gateway is a prime location to capitalize on the existing firms and desire for greater collaboration in order to attract new firms and anchor institutions. Doing so will help establish the Gateway site as a major hub of innovation. Redeveloping the site within the format of an innovation district also presents an opportunity for creation of a new residential neighborhood and commercial areas. The series of plans laid out in this report provide several options for how the county might approach such a project. It is this studio's hope that the alternatives presented encourage ambitious visioning of what the Gateway site might become, and how the county might actualize such a vision.

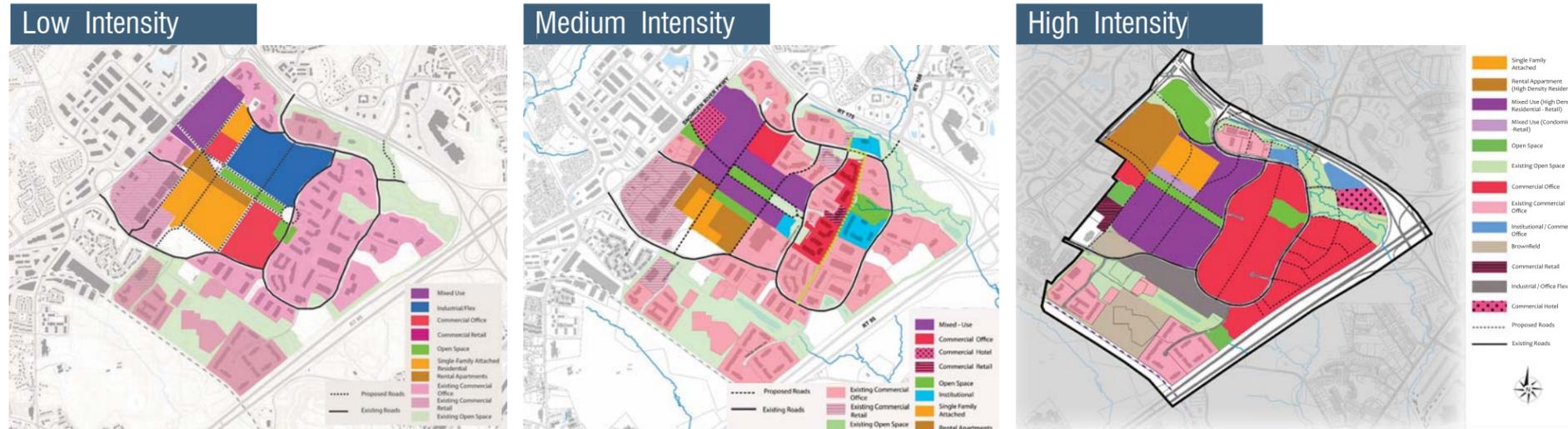


Figure 82: Land Use Plan, a comparison of all scenarios); Source: Author's diagram

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A. Appendix: Profile of Current Businesses

The CoStar Property Analytics tool was used to gather information about the current tenants of the Columbia Gateway. A polygon was traced to match the study area—roughly bounded by I-95, MD-175, Snowden River Parkway, Commerce Center Drive, and the CSX rail line. Table 23 displays the outputs:

Columbia Gateway CoStar Property Analytics (June 2016)			
Office or Industrial/Flex Buildings			97
Tenants			289
Industries (CoStar categorization)			16
Industries (sub-categorization)			48
Industries by Tenant Total			
IT Services/Systems/Solutions	34	Marketing	8
Consulting	26	Nonprofit/Social Services	8
Real Estate	24	Education	6
Retail	19	Government (county)	6
Software/Computers	17	Construction/Contractors	5
Insurance	15	Healthcare	5
Finance	13	HR/Staffing	4
Medical	12	Law Firms	4
Manufacturing	10	Accounting	3
Wholesaler	10	Communications	3
Defense-Related	9	Pharmaceuticals	3
Engineering	8	Recreational	3
2 or fewer firms: Architecture/Design, Distribution, Government (state), Landscaping, Professional Organizations, Research Institute, Social Services, Transportation, Utilities, Hotel, Business Accelerator, Shipping/Mailing			

Table 23: Columbia Gateway Property Analysis; Source: Author's compilation from CoStar Database

B. Appendix: Presentation Q&A and Comments

URSP 705/706 Summer Studio Presentation to Howard County Maryland Center for Entrepreneurship – 9/7/16

This product was presented to Howard County stakeholders at the Maryland Center for Entrepreneurship in Columbia on Wednesday, September 7, 2016. Audience commentary, questions, and feedback are summarized below and, where appropriate, accompanied by student responses.

General Commentary:

- The plans do not always delve thoroughly into the rationale behind the placement of specific land use areas, nor do they deal extensively with timing, phasing, or infrastructure costs and calculations. Students worked under the assumption that demolition, redevelopment, and infill construction would begin as soon as buildings end their lifecycles and restrictive covenants on major industrial sites expire.
- Innovation district programming and concepts were culled from existing districts around the country and their relevant master plans or other public materials; there tends not to be a uniform “success story” – the key to successful innovation districts appears to be a diversity of programming and interactive and collaborative opportunities for residents, employees, visitors, and community members
- None of the plans appear to significantly transform the transportation network within the site; it is especially noticeable that the Gateway Center Drive loop road remains intact across all three plans. External access points and improving the grid and connectivity within the larger parcels were emphasized more intentionally by the student groups given the large potential that exists in transforming the former GE site.
- Environmental and other factors that relate to the Gateway site from neighboring communities could have been better incorporated. Students struggled with the sheer size of the Columbia Gateway and decided to limit their proposals to that area while generalizing about surrounding parts of Columbia and Howard County.
- The Boulevard Park idea that is shared across all three alternatives could pose a challenge since building one-way roads on either side of it will restrict access to it from either side. Another option might be running a two-way boulevard down the center with large setbacks on either side of it adjacent to the neighboring properties, thereby creating a more accessible space for active use.
- Comparing the land use maps side by side is helpful, but the report should also line up the numerical data for each plan together on one page

Low Intensity Plan Q&A:

Q: What is the rationale behind the placement of the land use areas?

A: See above.

Q: What type of manufacturing is envisioned to take place in the TIF area?

A: See Section IIIA.

Q: What are the successful models for regular on-site innovation programming? What has worked well in other areas?

A: See above.

B. Appendix: Presentation Q&A and Comments

Low Intensity Plan Q&A (continued):

Q: What transportation elements are new?

A: See Section IIIA.

Q: Is there any consideration for phasing?

A: See above.

Q: What specific square footage has been added for each land use type?

A: See Section IIIA.

Q: At what stage does relocating County services occur?

A: This is a key priority for the Low Intensity Plan and should be done at the earliest point at which land or property can be acquired near the existing CIRQL demonstration site and in the designated Innovation Core and fitted for this purpose.

Medium Intensity Plan Q&A:

Q: Does the trail connect primarily ped/bike?

A: See Section IIIB.

Q: Are the sites along the trail existing facilities or new?

A: The plan calls for a combination of existing facilities, some adapted for innovative reuse, as well as new facilities. See Section IIIB for more detail.

Q: Will mixed use areas contain retail? Since the only areas specifically called out for new retail is located inside of the trail, is this sufficient?

A: Mixed use areas are intended to include retail. See Section IIIB for more detail.

Q: What is the vision for the mixed use areas?

A: See Section IIIB.

Q: Does this plan include an anchor institution?

A: This plan calls upon the innovative facilities adjacent to the trail concept to serve as joint anchors. See Section IIIB.

Other Comments:

- This plan may not have enough potential for new office space

B. Appendix: Presentation Q&A and Comments

High Intensity Plan Q&A:

Q: The corner location will be a challenge to activate the anchor site and hotel, what was the rationale for situating it here?

A: This was primarily done to attract visitors to the site from due to I-95 visibility. It is understood that this may require further consideration. See Section IIIC for additional rationale.

Q: What's the difference between the retail hub and the ground floor mixed use retail areas?

A: See Section IIIC.

Q: Where is parking?

A: See Section IIIC.

Q: With respect to the 35-acre green space created at the intersection of MD-175 and Snowden River Parkway, how will property owners be convinced to give up their land for conversion to a recreational space? This is a key corner so blending it into a park needs some additional thought... can a 35-acre park coexist with an innovation district?

A: Given the major urbanization that is called for under this plan, students expect that a large recreational space will be necessary to satisfy residents, employees, and visitors. Locating such an amenity is difficult given the spatial constraints of the site.

Q: Is office area densifying along I-95?

A: Yes, see Section IIIC.

Q: Could there be other uses for the rail line if the transit aspect is not feasible – bike/ped, etc.?

A: Yes, see Section IIIC.

END OF REPORT